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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	09/01/2020	10762002	BEEL3004/TL	1046

23364 7590 08/12/2020

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 593 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

Koen Simon Herman Beel, Eke, BELGIUM;
Yoav Nir, Komen, BELGIUM;
Filip Josephine Johan Louwet, Knesselare, BELGIUM;
Guy Coen, Aalst, BELGIUM;

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

23364 7590 07/29/2020

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

EXAMINER	
BARTELS, CHRISTOPHER A.	

ART UNIT	PAPER NUMBER
2184	

NOTIFICATION DATE	DELIVERY MODE
07/29/2020	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):

MAIL@BACONTHOMAS.COM

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U.S. Patent and Trademark Office
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Alexandria, Virginia 22313-1450

APPLICATION NO./ CONTROL NO.	FILING DATE	FIRST NAMED INVENTOR/ PATENT IN REEXAMINATION	ATTORNEY DOCKET NO.
14/344,836	03/03/2015	Beel et al.	BEEL3004/BEU/TL

	EXAMINER	
BACON & THOMAS, PLLC 625 SLATERS LANE FOURTH FLOOR ALEXANDRIA, VA 22314-1176	CHRISTOPHER A BARTELS	
	ART UNIT	PAPER
	2184	20200724

DATE MAILED: _____

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

Commissioner for Patents

The IDS filed on 06/19/2020 has been considered and entered fully. None of the references materially affect patentability. Thus prosecution remains closed.

/C.A.B/ Examiner, Art Unit 2184	/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184

PTO-90C (Rev.04-03)

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

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher Bartels
Attorney Docket Number	BEEL3004/TL

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/C.A.B/	1	20020054044	A1	2002-05-09	Lu et al.	

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher Bartels
	Attorney Docket Number	BEEL3004/TL

/C.A.B/	1	LINQ SOFTWARE USER'S GUIDE, Smart Technologies Inc., Copyright 2004-2005, Version 1.0, pages 1-19.	

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EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	06/26/2020

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher Bartels
	Attorney Docket Number	BEEL3004/TL

CERTIFICATION STATEMENT

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

X 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.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-06-19
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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



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Office of the Chief Financial Officer

Document Code:WFEE

User :66043

Sale Accounting Date:06/26/2020

Sale Item Reference Number	Effective Date
14344836	06/19/2020

Document Number	Fee Code	Fee Code Description	Amount Paid	Payment Method
I20206PB29584873	1806	SUBMISSION- INFORMATION DISCLOSURE STMT	$240.00	Deposit Account

Doc Code: QPIDS.REQ
Document Description: QuickPath Information Disclosure Statement

PTO/SB/09 (09-18)

CERTIFICATION AND REQUEST FOR CONSIDERATION OF AN INFORMATION DISCLOSURE STATEMENT FILED AFTER PAYMENT OF THE ISSUE FEE UNDER THE QPIDS PROGRAM

Non-Provisional Application Number: 14344836	Filing Date: March 3, 2015
First Named Inventor: Koen Simon Herman BEEL	Title of Invention: ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

THE UNDERSIGNED HEREBY CERTIFIES AND REQUESTS THE FOLLOWING FOR THE ABOVE-IDENTIFIED APPLICATION.

1. Consideration is requested of the information disclosure statement (IDS) submitted herewith, which is being filed after payment of the issue fee.
2. Check the box next to the appropriate selection:
   ☑ Each item of information contained in the IDS 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 IDS. See 37 CFR 1.97(e)(1).

   OR

   ☐ No item of information contained in the IDS 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 IDS was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the IDS. See 37 CFR 1.97(e)(2).

   OR

   ☐ See attached certification statement in compliance with 37 CFR 1.97(e).
3. Please charge the IDS fee set forth in 37 CFR 1.17(p) to Deposit Account No. 02-0200.
4. A Petition to Withdraw from Issue After Payment of the Issue Fee (37 CFR 1.313(c)(2)), including the petition fee set forth in 37 CFR 1.17(h), is submitted herewith as a **Web-based ePetition**.
   WARNING: Do not submit the petition as a follow-on paper via EFS-Web. Submit the petition as a Web-based ePetition by signing on to EFS-Web as a registered user, selecting the radio button next to "Existing application/patent," and then selecting the radio button next to "ePetition (for automatic processing and immediate grant, if all petitions requirements are met)." Failure to use the Web-based ePetition interface will result in automatic entry of the RCE.
5. A request for continued examination (RCE) under 37 CFR 1.114 and the RCE fee under 37 CFR 1.17(e) are submitted herewith.
6. The RCE will be treated as a "conditional" RCE. In the event the examiner determines that any item of information contained in the IDS necessitates the reopening of prosecution in the application, the undersigned understands that (i) the RCE will be processed and treated as an RCE under 37 CFR 1.114 and therefore (ii) the IDS fee under 37 CFR 1.17(p) will be returned in accordance with 37 CFR 1.97(b)(4). In the event that no item of information in the IDS necessitates reopening prosecution, the undersigned understands that the RCE will not be processed and the RCE fee under 37 CFR 1.17(e) will be returned.
7. This certification and request is being filed as a **Web-based ePetition** and is not accompanied by an amendment to the application. Inclusion of an amendment will result in automatic entry of the RCE.

Signature /Thomas Lee/	Date June 19, 2020
Name (Print/Typed) THOMAS LEE	Practitioner Registration Number (If applicable) 66396

Note: *Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required in accordance with 37 CFR 1.33 and 11.18. Please see 37 CFR 1.4(d) for the form of the signature. If necessary, submit multiple forms for more than one signature, see below.**

☐ *Total of _____ forms are submitted.

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

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).
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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
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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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REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14344836	Filing Date	2015-03-03	Docket Number (if applicable)	BEEL3004/TL	Art Unit	2184
First Named Inventor	Koen Simon Herman BEEL			Examiner Name	Christopher Bartels		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

☒ The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 020200

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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Signature of Registered U.S. Patent Practitioner			
Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-06-19
Name	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.114. 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 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.

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

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

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher Bartels
Attorney Docket Number	BEEL3004/TL

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	1	20020054044	A1	2002-05-09	Lu et al.	

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher Bartels
	Attorney Docket Number	BEEL3004/TL

	1	LINQ SOFTWARE USER'S GUIDE, Smart Technologies Inc., Copyright 2004-2005, Version 1.0, pages 1-19.	

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher Bartels
	Attorney Docket Number	BEEL3004/TL

CERTIFICATION STATEMENT

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

X 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.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-06-19
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

Electronic Patent Application Fee Transmittal

Application Number:	14344836
Filing Date:	03-Mar-2015
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Filer:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE- 37 CFR 1.17(H) (GROUP III)	1464	1	140	140
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1900	1900
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2040**



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Decision Date : June 19, 2020

In re Application of :

Koen Beel

DECISION ON PETITION
UNDER CFR 1.313(c)(2)

Application No : 14344836

Filed : 03-Mar-2015

Attorney Docket No : BEEL3004/BEU/TL

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed June 19, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2184 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt	
EFS ID:	39768900
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee
Filer Authorized By:	
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	19-JUN-2020
Filing Date:	03-MAR-2015
Time Stamp:	09:29:08
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2040
RAM confirmation Number	E20206I029018275
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	31521 5f73fdd855427c6112df3e7a5482e1c52003f822	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	BEEL3004_QPIDS_16JUN20.pdf	221628 b3c146ff2d99424179fdf424888762926291 6eec	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	BEEL3004_RCE_16JUN20.pdf	1349956 2c7bef28fd518ce311731d054d400c2c872f a169	no	3
Warnings:					
Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	BEEL3004_ids.pdf	1034411 325ee96ab78f8eef9414a1f1b8b40051d396 2a1c	no	4
Warnings:					
Information:					
5	Non Patent Literature	LinQ_Software_Users_Guide.pdf	2532188 5ecd1dab1c60cf631ea7f88a95907d0a9a3c 8107	no	19
Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	32245 0d2ea72a438ba31ac088297324b028a486e 25352	no	2
Warnings:					
Information:					

Total Files Size (in bytes):	5201949

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.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	14344836
Filing Date	03-Mar-2015
First Named Inventor	Koen Beel
Art Unit	2184
Examiner Name	CHRISTOPHER BARTELS
Attorney Docket Number	BEEL3004/BEU/TL
Title	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

○	Small Entity
○	Micro Entity
◉	Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◉ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◯ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Thomas Lee/
Name	Thomas Lee
Registration Number	66396

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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	06/23/2020	10691623	BEEL3004/BEU/TL	1046

23364 7590 06/03/2020

BACON & THOMAS, PLLC
625 SLATERS LANE
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ALEXANDRIA, VA 22314-1176

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 564 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

Koen Simon Herman Beel, Eke, BELGIUM;
Yoav Nir, Komen, BELGIUM;
Filip Josephine Johan Louwet, Knesselare, BELGIUM;
Guy Coen, Aalst, BELGIUM;

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IR103 (Rev. 10/09)

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

PTO/SB/08a (02-18)
Approved for use through 11/30/2020. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/C.A.B/	1	6601087		2003-07-29	Zhu et al.	
	2	7584313		2009-09-01	Hay et al.	
	3	7762470		2010-07-27	Finn et al.	
	4	8069465		2011-11-29	Bartholomay et al.	
	5	8327410		2012-12-04	Andersen et al.	
	6	8521926		2013-08-27	Hsueh et al.	
	7	8601470		2013-12-03	Yue et al.	
/C.A.B/	8	8717599		2014-05-06	Ochiai et al.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

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	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	9	8896656		2014-11-25	Epstein et al.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/C.A.B/	1	20030120849		2003-06-26	Roslak et al.	
	2	20060233191		2006-10-19	Pirzada et al.	
	3	20070162661		2007-07-12	Fu et al.	
	4	20080088634		2008-04-17	Thompson et al.	
	5	20080182518		2008-07-31	Lo	
	6	20090023475		2009-01-22	Chang et al.	
	7	20090029647		2009-01-29	Wei et al.	
/C.A.B/	8	20090251621		2009-10-08	Ichieda	

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	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	9	20100022274		2010-01-28	Roberts et al.	
	10	20100077021		2010-03-25	Hsueh et al.	
	11	20100091987		2010-04-15	Takahashi et al.	
	12	20100115145		2010-05-06	Banerjee et al.	
	13	20100154014		2010-06-17	Andersen et al.	
	14	20100297964		2010-11-25	Austin et al.	
	15	20100309896		2010-12-09	Sugiyama et al.	
	16	20110010470		2011-01-13	Hulbert et al.	
	17	20110010607		2011-01-13	Raveendran	
	18	20110038005		2011-02-17	Ochiai et al.	
/C.A.B/	19	20110210983		2011-09-01	Theimer et al.	

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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2]	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
/C.A.B/	1	2006-185359	JP		2006-07-13	Eastman Kodak Co.	English Abstract	
/C.A.B/	2	2009-080663	JP		2009-04-16	Brother Ind Ltd.	English Abstract	
/C.A.B/	3	2010-263326	JP		2010-11-18	Sumitomo Electric Ind.	English Abstract	
/C.A.B/	4	2010/008866	WO		2010-01-21	Schaaf		
/C.A.B/	5	2010135894	WO		2010-12-02	ZTE Corporation	English Abstract	X

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NON-PATENT LITERATURE DOCUMENTS Remove

Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T[5]
/C.A.B/	1	"Universal Serial Bus 3.0 Specification", Revision 1.0 Nov. 12, 2008.	
/C.A.B/	2	"Wireless Universal Serial Bus Specification 1.1", Revision 1.1 September 9, 2010.	

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

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	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	3	AUSTIN et al., "Determinants and Patterns of Control over Technology in a Computerized Meeting Room," CSCW 90 Proceedings, pp. 39-51 (Oct. 1990).	
/C.A.B/	4	ROTH, "Building Group Decision Support Rooms Using 'Off-the-Shelf' Computing Resources: Prospects and Issues," Database, pp. 21-31 (May 1993).	
/C.A.B/	5	GRAY, et al., "The User Interface in Group Decision Support Systems," Group Support Systems: New Perspectives, Ch. 10, Macmillan Publishing Company, New York (1993).	
/C.A.B/	6	Products, components, systems, and methods in public use and/or sale related to the Epson Quick Wireless Connection USB key and Quick Wireless Connection , developed by Epson (accessed July 7, 2017).	
/C.A.B/	7	Products, components, systems, and methods in public use and/or sale related to the IOGEAR GUW2015VKIT Wireless USB to VGA Adapter Kit, developed by IOGEAR (accessed July 17, 2017).	
/C.A.B/	8	Products, components, systems, and methods in public use and/or sale related to the ActionTec MyWirelessTV HDMI Transmitter, developed by ActionTec and Cavium (accessed Feb. 3, 2020).	
/C.A.B/	9	Chinese Notice on Reexamination in corresponding Chinese Application No. 201280074077.2, dated March 31, 2020.	☒
/C.A.B/	10	European Office Action in corresponding European Application No. 12775162.6, dated April 14, 2020.	☐
/C.A.B/	11	Brazil Office Action in corresponding Brazil Application No. BR112014026147-4, dated April 8, 2020.	☒
/C.A.B/	12	Brazil Office Action in corresponding Brazil Application No. BR122015022158-7, dated April 8, 2020.	☒

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	First Named Inventor	Koen Simon Herman BEEL
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	Examiner Name	Christopher A. Bartels
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EXAMINER SIGNATURE			
Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	05/12/2020

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

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

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CERTIFICATION STATEMENT

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-04-17
Name/Print	THOMAS LEE	Registration Number	66396

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(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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	2	7584313		2009-09-01	Hay et al.	
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	4	8069465		2011-11-29	Bartholomay et al.	
	5	8327410		2012-12-04	Andersen et al.	
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	5	20080182518		2008-07-31	Lo	
	6	20090023475		2009-01-22	Chang et al.	
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	9	20100022274		2010-01-28	Roberts et al.	
	10	20100077021		2010-03-25	Hsueh et al.	
	11	20100091987		2010-04-15	Takahashi et al.	
	12	20100115145		2010-05-06	Banerjee et al.	
	13	20100154014		2010-06-17	Andersen et al.	
	14	20100297964		2010-11-25	Austin et al.	
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	17	20110010607		2011-01-13	Raveendran	
	18	20110038005		2011-02-17	Ochiai et al.	
	19	20110210983		2011-09-01	Theimer et al.	

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	3	2010-263326	JP		2010-11-18	Sumitomo Electric Ind.	English Abstract	
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	3	AUSTIN et al., "Determinants and Patterns of Control over Technology in a Computerized Meeting Room," CSCW 90 Proceedings, pp. 39-51 (Oct. 1990).	
	4	ROTH, "Building Group Decision Support Rooms Using 'Off-the-Shelf' Computing Resources: Prospects and Issues," Database, pp. 21-31 (May 1993).	
	5	GRAY, et al., "The User Interface in Group Decision Support Systems," Group Support Systems: New Perspectives, Ch. 10, Macmillan Publishing Company, New York (1993).	
	6	Products, components, systems, and methods in public use and/or sale related to the Epson Quick Wireless Connection USB key and Quick Wireless Connection , developed by Epson (accessed July 7, 2017).	
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	9	Chinese Notice on Reexamination in corresponding Chinese Application No. 201280074077.2, dated March 31, 2020.	X
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	11	Brazil Office Action in corresponding Brazil Application No. BR112014026147-4, dated April 8, 2020.	☒
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国 际 局

(43) 国际公布日
2010 年 12 月 2 日 (02.12.2010)

PCT

(10) 国际公布号
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200910085521.0 2009 年 5 月 25 日 (25.05.2009) CN

(71) 申请人 (对除美国外的所有指定国): **中兴通讯股份有限公司 (ZTE CORPORATION)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。

(72) 发明人; 及

(75) 发明人/申请人 (仅对美国): **龚文强 (GONG, Wenqiang)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。 **姜承志 (JIANG, Chengzhi)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。 **郭素光 (GUO, Suguang)** [CN/CN]; 中国广东省深圳市南山区高新技术产业园科技南路中兴通讯大厦, Guangdong 518057 (CN)。

(74) 代理人: 北京派特恩知识产权代理事务所(普通合伙) (CHINA PAT INTELLECTUAL PROPERTY OFFICE); 中国北京市海淀区知春路 113 号 0717 室, Beijing 100086 (CN)。

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本国际公布:
— 包括国际检索报告(条约第 21 条(3))。

(54) Title: METHOD AND DEVICE FOR TRANSMITTING UNIVERSAL SERIAL BUS AUDIO DATA THROUGH A WIRELESS DATA TERMINAL

(54) 发明名称: 无线数据终端通用串行总线音频数据传输的方法及装置

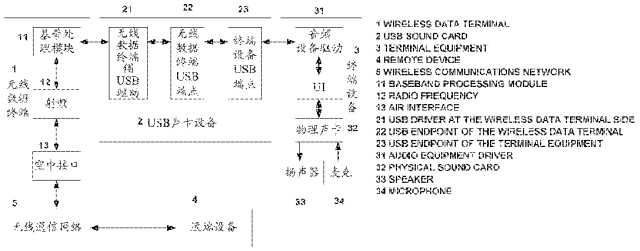


图 3 / Fig. 3

(57) Abstract: A method and device for transmitting universal serial bus (USB) audio data through a wireless data terminal are provided. The method enumerates an USB audio data transmission channel between a wireless data terminal and a terminal equipment into an USB sound card that adopts the USB AUDIO CLASS standard as defined by the USB specifications, so as to transmit audio data; the device includes a wireless data terminal, an USB sound card, and a terminal equipment. The USB sound card only transmits audio data, and does not process audio data; the USB audio equipment driver of the terminal equipment accesses the USB endpoint of the terminal equipment in the same manner of accessing a sound card interface. The present method and device specifically optimize USB audio data transmission channels, and fully utilize the powerful capability of terminal equipments, thereby enhancing the effectiveness of voice over USB (VOUSB) in practical application.

[见续页]

WO 2010/135894 A1

(57) 摘要:

公开了一种实现无线数据终端通用串行总线音频数据传输的方法及装置。其方法为将无线数据终端与终端设备之间的ＵＳＢ音频数据传输通道，采用ＵＳＢ规范定义的标准的ＵＳＢ　ＡＵＤＩＯ　ＣＬＡＳＳ枚举成一个ＵＳＢ声卡设备，传输音频数据；该装置包括无线数据终端、ＵＳＢ声卡设备、终端设备。所述ＵＳＢ声卡设备仅传输音频数据，而不对音频数据进行处理；终端设备的ＵＳＢ音频设备驱动以访问声卡设备接口的方式访问终端设备ＵＳＢ端点。采用本发明的方法及装置，对ＵＳＢ音频数据传输通道进行专门优化，充分利用终端设备处理音频数据的强大能力，增强了VOUSB的实际应用效果。

无线数据终端通用串行总线音频数据传输的方法及装置

技术领域

本发明涉及音频数据传输技术，具体涉及一种实现无线数据终端通用串行总线音频数据传输的方法及装置。

背景技术

目前，时分同步的码分多址（TD-SCDMA，Time Division-Synchronous Code Division Multiple Access）技术作为中国提出的第三代移动通信标准已经日趋成熟，在 TD-SCDMA 技术支持下，从网络下载数据和向网络上传数据的速度都得到了极大的提高，而速度的提高又必然会促进用户对音频业务和视频业务需求的增加。

目前，无线数据终端在处理音频数据时，对从空口接收到的模拟音频信号，直接送到相应的射频、编解码器等硬件设备进行解调、解码，最后由扬声器播放；对麦克采集的需要发送的模拟音频信号，在相应的编解码器、射频等硬件设备进行编码、调制后发送出去。这种处理音频数据方式存在的缺陷在于：由于需要对音频数据进行编码和解码，无线数据终端就必须配有相应的编解码器，增加了硬件成本。

为克服上述音频数据处理方式存在的缺陷，目前比较流行的实现方法是通用串行总线音频传输（VOUSB，Voice Over USB），下面以广泛应用的 PC 作为终端设备为例对该方法的实现作简单说明。无线数据终端将解调后的音频数据通过通用串行总线（USB，Universal Serial BUS）接口传输到 PC 进行解码等处理；类似地，将在 PC 中完成编码等处理的音频数据通过 USB 接口传输到无线数据终端。这样，无线数据终端在硬件上就不再需要编解码器，降低了硬件成本。而且，相对于无线数据终端，PC 具有更强的

计算能力和更多的内存资源，因此对音频数据具有更强大的处理能力，能够进行更加丰富的处理，如能够进行去噪、润饰、混音等处理。

图 1 为现有技术中 VOUSB 的实现方案示意图，如图 1 所示，无线数据终端的空中接口接收远端设备经无线通信网络发来的模拟音频信号，并传输到射频进行解调，之后，由基带处理模块对解调后的音频数据进行放大和数字滤波处理，得到脉冲编码调制（PCM，Pulse Code Modulation） 码流，再将 PCM 码流传输到无线数据终端侧 USB 驱动，由该无线数据终端侧 USB 驱动将 PCM 码流传输到无线数据终端的 USB 端点，最后，按照 USB 标准的批量传输方式，PCM 码流经无线数据终端的 USB 端点传输到终端设备的 USB 端点。这里，无线数据终端侧 USB 驱动的作用是从基带处理模块接收音频数据并传输到无线数据终端的 USB 端点，或从无线数据终端的 USB 端点读出音频数据并传输到基带处理模块。所述 USB 标准的批量传输方式的特点是支持在不确定的时间内进行大量的数据传输，能够保证数据一定可以正确传输，但不保证传输的带宽和延时，因此数据传输的实时性不好。另外，对于以 USB 标准的批量传输方式传输的音频数据，终端设备没有标准设备驱动对其进行处理，如果需要对该音频数据进行处理，就需要借助于应用程序用户接口（UI，User Interface）来实现，其实现过程如下：

对无线数据终端发送到终端设备的 USB 端点的 PCM 码流，终端设备侧 USB 驱动将其读出，并进一步由终端设备的 UI 从终端设备侧 USB 驱动读取并处理，之后，将 PCM 码流传输到物理声卡。物理声卡对传输来的 PCM 码流进行解码，再经 A/D 转换等处理得到模拟音频信号，最后将模拟音频信号送至扬声器播放。所述物理声卡可以为外设组件互连（PCI，Peripheral Component Interconnect）接口的声卡或 USB 声卡等。这里，终端设备侧 USB 驱动的作用是从终端设备 USB 端点读出音频数据传输到 UI，

或从 UI 获取音频数据传输到终端设备的 USB 端点。

基于以上描述可见，VOUSB 的实现方案中，无线数据终端与终端设备之间的 USB 音频数据传输通道仅仅是作为数据的传输通道，这样带来的问题是没有针对音频数据传输的特点做专门的优化，在实时性等方面影响了 VOUSB 的实际应用效果。

发明内容

有鉴于此，本发明的主要目的在于提供一种实现无线数据终端通用串行总线音频数据传输的方法及装置，充分利用终端设备处理音频数据的强大能力，增强 VOUSB 的实际应用效果。

为解决上述技术问题，本发明的技术方案是这样实现的：

一种实现无线数据终端通用串行总线音频数据传输的方法，将无线数据终端和终端设备之间的通用串行总线（USB）音频数据传输通道枚举为 USB 声卡设备，该方法包括：

无线数据终端通过所述 USB 声卡设备向终端设备发送音频数据，终端设备通过自身的音频设备驱动访问所述 USB 声卡设备获取音频数据；

终端设备通过自身的音频设备驱动向所述 USB 声卡设备发送音频数据，无线数据终端通过所述 USB 声卡设备接收该音频数据。

所述将无线数据终端和终端设备之间的 USB 音频数据传输通道枚举为 USB 声卡设备，包括：

无线数据终端将传输音频数据的无线数据终端 USB 端点定义为声卡，并将该无线数据终端 USB 端点通过 USB 数据线连接到终端设备 USB 端点；

终端设备向无线数据终端请求获取所连接声卡的设备描述符、配置描述符、描述符集合，无线数据终端收到请求后，向终端设备发送设备描述符、配置描述符、描述符集合；

终端设备根据获取的设备描述符、配置描述符、描述符集合确定能够

提供 USB 的驱动后，加载相应符合 USB 规范的音频设备驱动，由音频设备驱动对声卡进行配置，得到 USB 声卡设备。

所述终端设备包括音频设备驱动、用户接口（UI）和物理声卡，

所述终端设备通过自身的音频设备驱动访问 USB 声卡设备获取音频数据，包括：音频设备驱动以访问 USB 声卡设备接口的方式访问所述 USB 声卡设备，对传输到 USB 声卡设备的脉冲编码调制（PCM）码流进行读取和释放；UI 通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡。

所述终端设备包括音频设备驱动、UI 和物理声卡，

所述终端设备通过自身的音频设备驱动向 USB 声卡设备发送音频数据，包括：物理声卡由模拟音频信号得到 PCM 码流；UI 从物理声卡获取该 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动，音频设备驱动向 USB 声卡设备发送 PCM 码流。

所述无线数据终端通过 USB 声卡设备向终端设备发送音频数据，包括：无线数据终端的基带处理模块将处理得到的 PCM 码流传输到所述 USB 声卡设备的无线数据终端侧 USB 驱动。

所述无线数据终端通过 USB 声卡设备接收音频数据，包括：无线数据终端的基带处理模块通过所述 USB 声卡设备的无线数据终端侧 USB 驱动获取传输到无线数据终端 USB 端点的 PCM 码流。

一种实现无线数据终端通用串行总线音频数据传输的装置，包括：

无线数据终端，用于通过 USB 声卡设备向终端设备发送音频数据，还用于通过 USB 声卡设备接收来自终端设备的音频数据。

将无线数据终端和终端设备之间的 USB 音频数据传输通道枚举为 USB 声卡设备，用于在无线数据终端和终端设备之间传输音频数据；

终端设备，用于通过自身的音频设备驱动访问 USB 声卡设备获取来自

无线数据终端的音频数据，还用于通过自身的音频设备驱动向 USB 声卡设备发送音频数据。

所述 USB 声卡设备包括：无线数据终端侧 USB 驱动、无线数据终端 USB 端点和终端设备 USB 端点，

所述无线数据终端侧 USB 驱动与无线数据终端的基带处理模块相连；

所述无线数据终端 USB 端点通过 USB 数据线与终端设备 USB 端点相连；

所述终端设备 USB 端点与终端设备的音频设备驱动相连。

所述终端设备用于通过自身的音频设备驱动访问 USB 声卡设备获取来自无线数据终端的音频数据时，所述终端设备包括：

音频设备驱动，用于以访问 USB 声卡设备接口的方式访问所述终端设备 USB 端点，对传输到终端设备 USB 端点的 PCM 码流进行读取和释放；

UI，用于通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡；

物理声卡，用于由 PCM 码流得到模拟音频信号。

所述终端设备用于通过自身的音频设备驱动向 USB 声卡设备发送音频数据时，所述终端设备包括：

物理声卡，用于由模拟音频信号得到 PCM 码流；

UI，用于从物理声卡获取该 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动；

音频设备驱动，用于向所述终端设备 USB 端点发送 PCM 码流。

由此可见，相比现有技术而言，本发明中提供的一种实现无线数据终端通用串行总线音频数据传输的方法及装置，针对音频数据传输的特点，对 USB 音频数据传输通道进行抽象和优化，充分利用终端设备处理音频数据的强大能力，增强了 VOUSB 的实际应用效果。

另外，本发明方案还具有以下特点和优点：

首先，将无线数据终端和终端设备之间的USB音频数据传输通道，采用USB规范定义的标准的USB AUDIO CLASS枚举成一个USB声卡设备来传输音频数据，而广泛使用的终端设备上的操作系统都默认地提供了符合USB规范的音频设备驱动的实现，因此，音频设备驱动以访问USB声卡设备接口的方式访问终端设备的USB端点；音频设备驱动对从USB端点读取的音频数据进行读取和释放。

其次，采用USB标准的同步传输方式传输音频数据具有很好的实时性，且终端设备具有针对该同步传输方式的标准驱动，即音频设备驱动，对终端设备USB端点的音频数据的读取和释放都是在音频设备驱动中完成，其处理优先级高于在应用程序UI中处理，因此，在终端设备的操作系统负载很重时，音频数据的处理依然具有非常好的实时性。

最后，UI通过音频设备接口来访问音频设备驱动，将完成释放的音频数据传输到物理声卡。由于UI是通过音频设备接口来访问音频设备驱动，降低了UI对音频设备驱动的依赖；音频设备接口是标准接口，无需关注底层音频设备驱动实现的细节，且操作系统可移植性好，使UI实现起来更加简单、可靠。

附图说明

图1为现有技术中VOUSB的实现方案示意图；

图2为本发明中实现无线数据终端通用串行总线音频数据传输的装置结构示意图；

图3为本发明中将USB音频数据传输通道抽象成USB声卡设备的示意图；

图4为本发明中无线数据终端作为音频数据接收方的传输流程图；

图5为本发明中无线数据终端作为音频数据发送方的传输流程图。

具体实施方式

下面结合附图及具体实施例对本发明再作进一步详细的说明。

本发明中提供一种实现无线数据终端通用串行总线音频数据传输的装置，如图 2 所示，该装置主要由无线数据终端、USB 声卡设备、以及终端设备组成。其中，

无线数据终端，用于通过 USB 声卡设备向终端设备发送音频数据，还用于通过 USB 声卡设备接收来自终端设备的音频数据；

将无线数据终端和终端设备之间的 USB 音频数据传输通道枚举为 USB 声卡设备，用于在无线数据终端和终端设备之间传输音频数据；

终端设备，用于通过自身的音频设备驱动访问 USB 声卡设备来获取来自无线数据终端的音频数据，还用于通过自身的音频设备驱动向 USB 声卡设备发送音频数据。

具体地，终端设备的音频设备驱动以访问 USB 声卡设备接口的方式访问终端设备 USB 端点，对传输到该终端设备 USB 端点的音频数据进行读取和释放，之后，进一步由 UI 将音频数据传输到物理声卡进行解码、D/A 转换，最后由扬声器播放；对麦克采集、并进一步由物理声卡进行 A/D 转换、编码的音频数据，由 UI 传输到音频设备驱动进行压缩，之后，由音频设备驱动以访问 USB 声卡设备接口的方式回传到终端设备 USB 端点。

图 3 为本发明中将 USB 音频数据传输通道抽象成 USB 声卡设备的示意图，如图 3 所示，对比图 1，本发明中，根据 USB 规范中 USB 声卡应用方法将无线数据终端与终端设备之间的 USB 音频数据传输通道抽象成一个 USB 声卡设备。所述 USB 音频数据传输通道指：无线数据终端侧 USB 驱动、无线数据终端的 USB 端点、终端设备的 USB 端点、以及两个 USB 端点之间的 USB 数据线在内的音频数据传输通道。实现将 USB 音频数据传输通道抽象成一个 USB 声卡设备的关键在于：将 USB 音频数据传输通道，采

用 USB 规范定义的标准的 USB AUDIO CLASS 枚举成一个 USB 声卡设备。所述枚举通过以下步骤来实现：首先，无线数据终端侧将传输音频数据的无线数据终端 USB 端点定义为一个声卡，并将该无线数据终端 USB 端点通过 USB 数据线连接到终端设备 USB 端点；之后，终端设备向无线数据终端发送请求，请求获取所连接声卡的设备描述符、配置描述符、描述符集合等信息；无线数据终端在收到请求后，向终端设备发送所请求的设备描述符、配置描述符、描述符集合等信息；然后，终端设备在获取这些信息并根据这些信息确定能够提供 USB 的驱动以后，加载相应符合 USB 规范的音频设备驱动；最后，终端设备在得到各种描述符之后，认为所连接的声卡的信息已经齐全，便由音频设备驱动对声卡进行配置，配置成功即可实现无线数据终端与终端设备之间的音频数据传输。至此，枚举过程结束，完成了将 USB 音频数据传输通道枚举成 USB 声卡设备。无线数据终端与 USB 声卡设备的无线数据终端侧 USB 驱动相连接；终端设备与 USB 声卡设备的终端设备 USB 端点相连接。

不同于通常的 USB 声卡等物理声卡所具有的音频数据处理能力，以及能够将处理后的音频数据直接送到扬声器播放的处理能力，该 USB 声卡设备的特点是具有与物理声卡相同的访问接口和使用方式，对用户而言可以将 USB 声卡设备视作一个实际的物理声卡，但实际上，这个 USB 声卡设备只具有音频数据传输功能，而没有真实的音频数据处理能力，如果还需要对收到的音频数据进行处理，就需要借助于终端设备上的物理声卡来实现。对于终端设备发送到无线数据终端的音频数据，无线数据终端将通过无线通信网络传输到远端设备。所述远端设备可以为无线数据终端或终端设备。如果远端设备还要对收到的音频数据进行处理，对于远端设备是终端设备的情况，直接借助该终端设备上的物理声卡处理音频数据后播放；对于远端设备是无线数据终端的情况，将接收到的音频数据传输到与该无

线数据终端通过 USB 声卡设备相连的终端设备，借助于该终端设备上的物理声卡处理音频数据后播放。

由于将无线数据终端和终端设备之间的 USB 音频数据传输通道，采用 USB 规范定义的标准的 USB AUDIO CLASS 枚举成一个 USB 声卡设备，来实现音频数据传输，而广泛使用的终端设备上的操作系统都默认地提供了符合 USB 规范的音频设备驱动的实现，因此，对于由无线数据终端发送到 USB 声卡设备的终端设备 USB 端点的音频数据，音频设备驱动以访问 USB 声卡设备接口的方式访问该终端设备 USB 端点；音频设备驱动在访问终端设备 USB 端点时，对发送到该终端设备 USB 端点的音频数据进行读取和释放，相对于现有的由应用程序 UI 读取和释放音频数据，由音频设备驱动进行读取和释放优先级更高，因此，即使在终端设备的操作系统负载很重时，音频数据的处理依然具有很好的实时性；音频设备驱动除了向下访问终端设备 USB 端点，向上还可提供音频设备接口，该音频设备接口是标准接口，UI 访问该音频设备接口时，无需关注底层的音频设备驱动实现的细节，且操作系统可移植性好，UI 可通过音频设备接口访问音频设备驱动并将音频数据传送到物理声卡，减少了 UI 对音频设备驱动的依赖，使 UI 实现起来更加简单、可靠。

具体地，终端设备通过 USB 声卡设备获取音频数据时，音频设备驱动用于以访问 USB 声卡设备接口的方式访问所述终端设备 USB 端点，对传输到终端设备 USB 端点的 PCM 码流进行读取和释放；UI，用于通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡；物理声卡，用于由 PCM 码流得到模拟音频信号。

终端设备通过 USB 声卡设备发送音频数据时，物理声卡用于由模拟音频信号得到 PCM 码流；UI 用于从物理声卡获取该 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动；音频设备驱动

用于向所述终端设备 USB 端点发送 PCM 码流。

利用 USB 声卡设备实现音频数据传输的过程如图 4、图 5 所示。

图 4 为无线数据终端作为音频数据接收方的传输流程图，如图 4 所示，音频数据的传输包括以下步骤：

步骤 401：无线数据终端的空中接口接收远端设备经无线通信网络发来的模拟音频信号，并传送到射频等硬件进行解调，之后，由基带处理模块对解调后的音频数据进行放大和数字滤波处理，得到 PCM 码流。

步骤 402：处理后得到的 PCM 码流由无线数据终端的基带处理模块传输到 USB 声卡设备的无线数据终端侧 USB 驱动；之后，按照 USB 标准的同步传输方式，PCM 码流经无线数据终端 USB 端点和 USB 数据线被传输到 USB 声卡设备的终端设备 USB 端点。

步骤 403：在 PCM 码流传输到终端设备 USB 端点之后，终端设备的音频设备驱动以访问 USB 声卡设备接口的方式访问该终端设备 USB 端点，并对传输到终端设备 USB 端点的 PCM 码流进行读取和释放，之后，UI 通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡。

步骤 404：物理声卡对传送来的 PCM 码流进行解码、D/A 转换等处理后得到模拟音频信号，最后，将该模拟音频信号传输到扬声器播放。

图 5 为无线数据终端作为音频数据发送方的传输流程图，如图 5 所示，音频数据的传输包括以下步骤：

步骤 501：终端设备的麦克将采集的模拟音频信号传送到物理声卡，由物理声卡对其进行 A/D 转换、编码等处理，得到 PCM 码流形式的数字音频信号。

步骤 502：终端设备的 UI 从物理声卡获取 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动，由音频设备驱动对 PCM 码流进行压缩，之后，音频设备驱动以访问 USB 声卡设备接口的

方式将 PCM 码流回传到 USB 声卡设备的终端设备 USB 端点。

步骤 503：在 PCM 码流传输到 USB 声卡设备的终端设备 USB 端点之后，按照 USB 标准的同步传输方式，PCM 码流经 USB 数据线传输到 USB 声卡设备的无线数据终端 USB 端点。

步骤 504：无线数据终端的基带处理模块通过无线数据终端侧 USB 驱动获取传输到无线数据终端 USB 端点的 PCM 码流，进行放大和数字滤波处理，再经射频进行调制，得到模拟音频信号，最后，由空中接口经无线通信网络发送到远端设备。

以上所述，仅为本发明的较佳实施例而已，并非用于限定本发明的保护范围。

权利要求书

1、一种实现无线数据终端通用串行总线音频数据传输的方法，其特征在于，将无线数据终端和终端设备之间的通用串行总线（USB）音频数据传输通道枚举为 USB 声卡设备，该方法包括:

无线数据终端通过所述 USB 声卡设备向终端设备发送音频数据，终端设备通过自身的音频设备驱动访问所述 USB 声卡设备获取音频数据;

终端设备通过自身的音频设备驱动向所述 USB 声卡设备发送音频数据，无线数据终端通过所述 USB 声卡设备接收该音频数据。

2、根据权利要求 1 所述的方法，其特征在于，所述将无线数据终端和终端设备之间的 USB 音频数据传输通道枚举为 USB 声卡设备，包括:

无线数据终端将传输音频数据的无线数据终端 USB 端点定义为声卡，并将该无线数据终端 USB 端点通过 USB 数据线连接到终端设备 USB 端点;

终端设备向无线数据终端请求获取所连接声卡的设备描述符、配置描述符、描述符集合，无线数据终端收到请求后，向终端设备发送设备描述符、配置描述符、描述符集合;

终端设备根据获取的设备描述符、配置描述符、描述符集合确定能够提供 USB 的驱动后，加载相应符合 USB 规范的音频设备驱动，由音频设备驱动对声卡进行配置，得到 USB 声卡设备。

3、根据权利要求 1 所述的方法，其特征在于，所述终端设备包括音频设备驱动、用户接口（UI）和物理声卡，

所述终端设备通过自身的音频设备驱动访问 USB 声卡设备获取音频数据，包括: 音频设备驱动以访问 USB 声卡设备接口的方式访问所述 USB 声卡设备，对传输到 USB 声卡设备的脉冲编码调制（PCM）码流进行读取和释放; UI 通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡。

4、根据权利要求 1 所述的方法，其特征在于，所述终端设备包括音频设备驱动、UI 和物理声卡，

所述终端设备通过自身的音频设备驱动向 USB 声卡设备发送音频数据，包括：物理声卡由模拟音频信号得到 PCM 码流；UI 从物理声卡获取该 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动，音频设备驱动向 USB 声卡设备发送 PCM 码流。

5、根据权利要求 1 至 4 任一所述的方法，其特征在于，所述无线数据终端通过 USB 声卡设备向终端设备发送音频数据，包括：无线数据终端的基带处理模块将处理得到的 PCM 码流传输到所述 USB 声卡设备的无线数据终端侧 USB 驱动。

6、根据权利要求 1 至 4 任一所述的方法，其特征在于，所述无线数据终端通过 USB 声卡设备接收音频数据，包括：无线数据终端的基带处理模块通过所述 USB 声卡设备的无线数据终端侧 USB 驱动获取传输到无线数据终端 USB 端点的 PCM 码流。

7、一种实现无线数据终端通用串行总线音频数据传输的装置，其特征在于，包括：

无线数据终端，用于通过 USB 声卡设备向终端设备发送音频数据，还用于通过 USB 声卡设备接收来自终端设备的音频数据。

将无线数据终端和终端设备之间的 USB 音频数据传输通道枚举为 USB 声卡设备，用于在无线数据终端和终端设备之间传输音频数据；

终端设备，用于通过自身的音频设备驱动访问 USB 声卡设备获取来自无线数据终端的音频数据，还用于通过自身的音频设备驱动向 USB 声卡设备发送音频数据。

8、根据权利要求 7 所述的装置，其特征在于，所述 USB 声卡设备包括：无线数据终端侧 USB 驱动、无线数据终端 USB 端点和终端设备 USB

端点，

所述无线数据终端侧 USB 驱动与无线数据终端的基带处理模块相连；

所述无线数据终端 USB 端点通过 USB 数据线与终端设备 USB 端点相连；

所述终端设备 USB 端点与终端设备的音频设备驱动相连。

9、根据权利要求 8 所述的装置，其特征在于，所述终端设备用于通过自身的音频设备驱动访问 USB 声卡设备获取来自无线数据终端的音频数据时，所述终端设备包括：

音频设备驱动，用于以访问 USB 声卡设备接口的方式访问所述终端设备 USB 端点，对传输到终端设备 USB 端点的 PCM 码流进行读取和释放；

UI，用于通过音频设备接口访问音频设备驱动，将 PCM 码流传输到物理声卡；

物理声卡，用于由 PCM 码流得到模拟音频信号。

10、根据权利要求 8 所述的装置，其特征在于，所述终端设备用于通过自身的音频设备驱动向 USB 声卡设备发送音频数据时，所述终端设备包括：

物理声卡，用于由模拟音频信号得到 PCM 码流；

UI，用于从物理声卡获取该 PCM 码流，并通过音频设备驱动的音频设备接口将 PCM 码流传输到音频设备驱动；

音频设备驱动，用于向所述终端设备 USB 端点发送 PCM 码流。

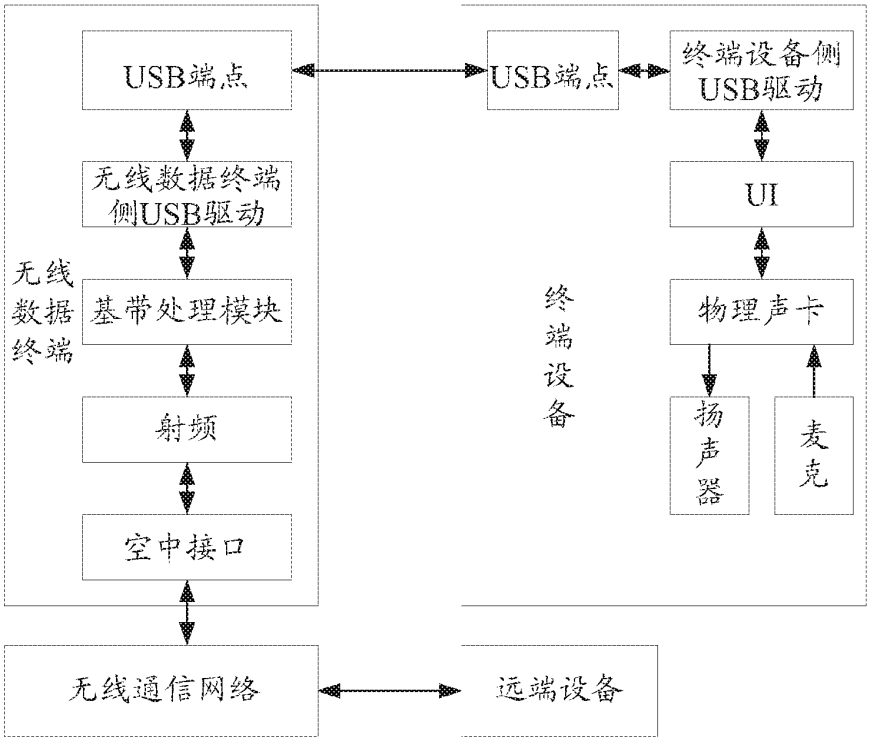

USB端点
USB端点
终端设备侧USB驱动
无线数据终端侧USB驱动
UI
无线数据终端
基带处理模块
终端设备
物理声卡
射频
扬声器
麦克
空中接口
无线通信网络
远端设备

图 1

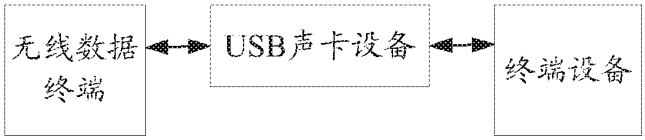

无线数据终端
USB声卡设备
终端设备

图 2

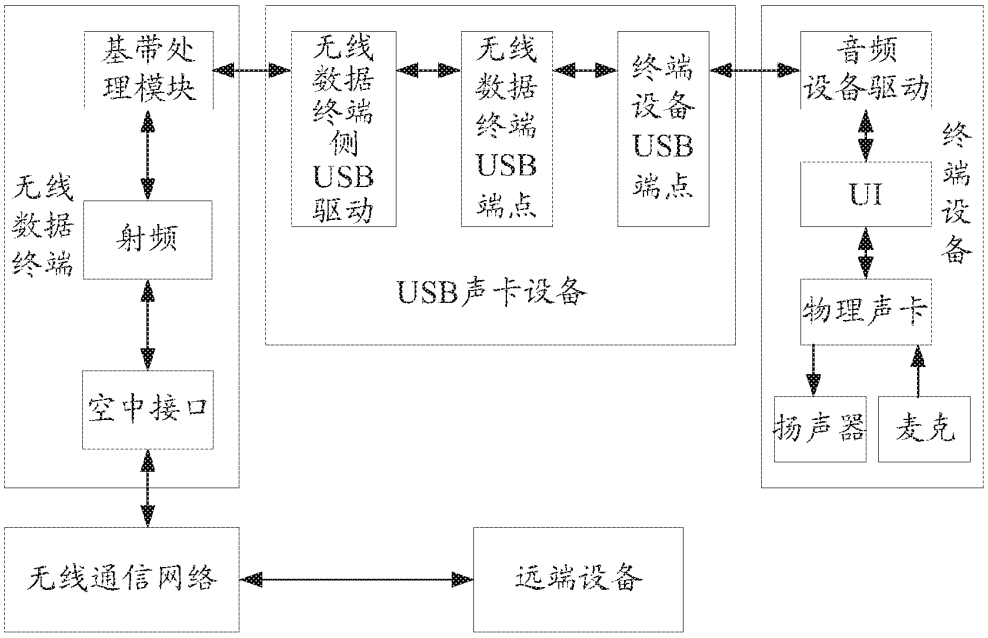

基带处理模块
无线数据终端侧USB驱动
无线数据终端USB端点
终端设备USB端点
音频设备驱动
无线数据终端
射频
USB声卡设备
UI
终端设备
物理声卡
空中接口
扬声器
麦克
无线通信网络
远端设备

图 3

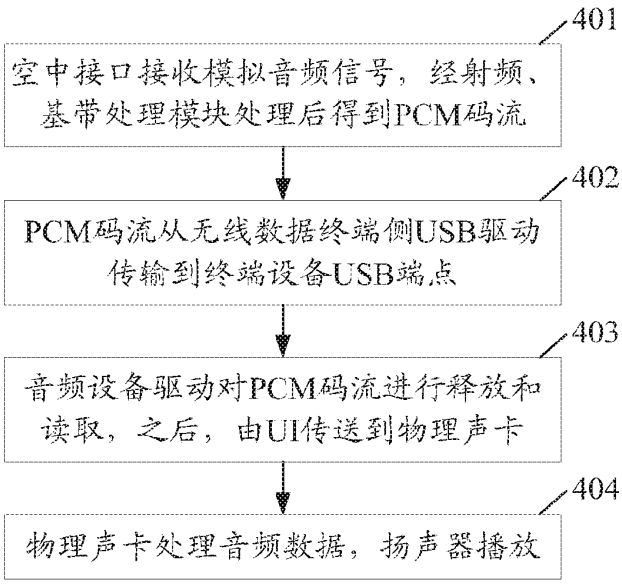

401
空中接口接收模拟音频信号，经射频、基带处理模块处理后得到PCM码流
402
PCM码流从无线数据终端侧USB驱动传输到终端设备USB端点
403
音频设备驱动对PCM码流进行释放和读取，之后，由UI传送到物理声卡
404
物理声卡处理音频数据，扬声器播放

图 4

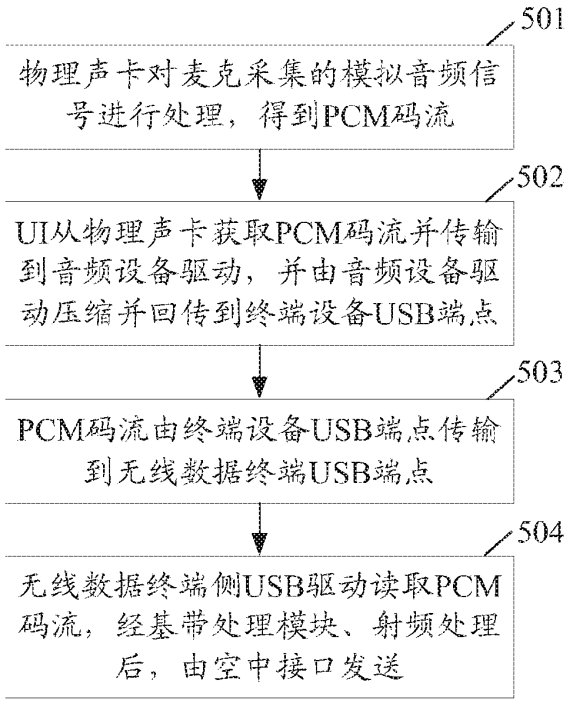

501
物理声卡对麦克采集的模拟音频信号进行处理，得到PCM码流
502
UI从物理声卡获取PCM码流并传输到音频设备驱动，并由音频设备驱动压缩并回传到终端设备USB端点
503
PCM码流由终端设备USB端点传输到无线数据终端USB端点
504
无线数据终端侧USB驱动读取PCM码流，经基带处理模块、射频处理后，由空中接口发送

图 5

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2009/075508

A. CLASSIFICATION OF SUBJECT MATTER

see the extra sheet

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC: G06F3/-; H04W; G06F13/-; H04B1/-; H04M; H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT,CNKI,WPI,EPODOC,PAJ: USB, wireless+, audio, card, universal, serial, bus, voice, transmit+, transmission, terminal, channel, driv+, own, access+, code, stream, PCM, interface, radio, frequency

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
P, X	CN101566940A, (ZHONGXING COMMUNICATION CO LTD SHENZHEN), 28 Oct. 2009(28.10.2009), the whole document	1-10
Y	CN200950579Y, (LI Y), 19 Sep. 2007(19.09.2007), the description page 1 line 11 to page 4 line 1, and figures 1-2	1, 7
A		2-6, 8-10
Y	US20080104289A1, (D-BOX TECHNOLOGIES INC et al.), 01 May 2008(01.05.2008), the description paragraphs 37-44 and figure 3	1, 7
A		2-6, 8-10
A	CN101212750A, (LEJIN ELECTRONICS CHINA RES & DEV CENT), 02 Jul. 2008(02.07.2008), the whole document	1-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim (S) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
01 Mar. 2010(01.03.2010)	**11 Mar. 2010 (11.03.2010)**
Name and mailing address of the ISA/CN The State Intellectual Property Office, the P.R.China 6 Xitucheng Rd., Jimen Bridge, Haidian District, Beijing, China 100088 Facsimile No. 86-10-62019451	Authorized officer ZHAO, Xiaoning Telephone No. (86-10)62412071

Form PCT/ISA /210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2009/075508

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN101566940A	28.10.2009	none	
CN200950579Y	19.09.2007	none	
US20080104289A1	01.05.2008	WO2008049217A1	02.05.2008
		KR20090074260A	06.07.2009
		EP2092518 A1	26.08.2009
		CN101611443A	23.12.2009
		CA2667575A1	02.05.2008
CN101212750A	02.07.2008	none	

Form PCT/ISA /210 (patent family annex) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2009/075508

CLASSIFICATION OF SUBJECT MATTER

G06F3/16(2006.01) i
H04W88/02(2009.01) i

Form PCT/ISA /210 (extra sheet) (July 2009)

国际检索报告

国际申请号
PCT/CN2009/075508

A. 主题的分类

参见附加页

按照国际专利分类(IPC)或者同时按照国家分类和 IPC 两种分类

B. 检索领域

检索的最低限度文献(标明分类系统和分类号)

IPC: G06F3/-; H04W; G06F13/-; H04B1/-; H04M; H04Q

包含在检索领域中的除最低限度文献以外的检索文献

在国际检索时查阅的电子数据库(数据库的名称，和使用的检索词（如使用）) CNPAT,CNKI,WPI,EPODOC,PAJ

无线，声卡，音频，USB，传输，传送，终端，通用，串行，总线，声音，通道，驱动，自身，访问，端点，码流，PCM，接口，射频

wireless+, audio, card, universal, serial, bus, voice, transmit+, transmission, terminal, channel, driv+, own, access+, code, stream, PCM, interface, radio, frequency

C. 相关文件

类　型*	引用文件，必要时，指明相关段落	相关的权利要求
P, X	CN101566940A，(中兴通讯股份有限公司)，28.10 月 2009(28.10.2009)，全文	1-10
Y	CN200950579Y，(李宇波)，19.9 月 2007(19.09.2007)，说明书第 1 页第 11 行---第 4 页第 1 行及附图 1-2	1, 7
A		2-6, 8-10
Y	US20080104289A1，(D-BOX TECHNOLOGIES INC 等)，01.5 月 2008(01.05.2008)，说明书第 37-44 段及附图 3	1, 7
A		2-6, 8-10
A	CN101212750A，(乐金电子（中国）研究开发中心有限公司)，02.7 月 2008(02.07.2008)，全文	1-10

☐ 其余文件在 C 栏的续页中列出。　　☒ 见同族专利附件。

* 引用文件的具体类型：

"A" 认为不特别相关的表示了现有技术一般状态的文件

"E" 在国际申请日的当天或之后公布的在先申请或专利

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CN101566940A	28.10.2009	无	
CN200950579Y	19.09.2007	无	
US20080104289A1	01.05.2008	WO2008049217A1	02.05.2008
		KR20090074260A	06.07.2009
		EP2092518 A1	26.08.2009
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EPO Machine Translation XML

SUBJECT OF THE INVENTION

[**0001**] Wireless data terminal universal serial bus audio data transmission method and device technical field

[**0002**] BACKGROUND OF THE INVENTION 1. Field of the Invention The present invention relates to audio data transmission technologies, and in particular, to a method and an apparatus for implementing audio data transmission of a universal data bus of a wireless data terminal. Background technique

[**0003**] At present, Time Division-Synchronous Code Division Multiple Access (TD-SCDMA) technology has become increasingly mature as the third generation mobile communication standard proposed by China. Under the support of TD-SCDMA technology, it is downloaded from the Internet Data and the speed of uploading data to the network have been greatly improved, and the speed increase will inevitably promote the user's demand for audio and video services.

[**0004**] At present, the wireless data terminal processes the audio data and directly sends the analog audio signal received from the air interface to the corresponding radio frequency, codec and other hardware devices for demodulation and decoding, and finally, the speaker plays. The need for the microphone acquisition Sent analog audio signal, in the appropriate codec, radio frequency and other hardware equipment for coding, modulation sent. The disadvantage of this way of processing audio data lies in the fact that due to the need to encode and decode the audio data, the wireless data terminal must be equipped with a corresponding codec, which increases the hardware cost.

[**0005**] In order to overcome the shortcomings of the above audio data processing methods, the popular method of implementation currently is Voice Over USB (VOUSB). In the following, taking a widely used PC as a terminal device as an example, Single description. The wireless data terminal transmits the demodulated audio data to a PC for decoding and the like via a Universal Serial Bus (USB) interface. Similarly, the audio data that has been processed in the PC, such as encoding, is transmitted to the USB interface Wireless data terminal. In this way, wireless data terminals eliminate the need for codecs on the hardware, reducing hardware costs. Moreover, PC has more computing power and more memory resources than wireless data terminal, so it has more powerful

processing ability for audio data and can carry out richer processing such as denoising, retouching, mixing Other treatment.

[0006] As shown in FIG. 1, an air interface of a wireless data terminal receives an analog audio signal sent by a remote device through a wireless communication network, and transmits the analog audio signal to a radio frequency for demodulation. After that, The baseband processing module amplifies and digitally demodulates the demodulated audio data to obtain a Pulse Code Modulation (PCM) code stream, and then transmits the PCM code stream to a USB driver on the side of the wireless data terminal. The wireless data The terminal-side USB driver transmits the PCM code stream to the USB endpoint of the wireless data terminal. Finally, the PCM code is transmitted to the USB endpoint of the terminal device via the USB endpoint of the wireless data terminal according to the batch transmission method of the USB standard. Here, the function of the USB driver on the side of the wireless data terminal is to receive the audio data from the baseband processing module and transmit the audio data to the USB endpoint of the wireless data terminal, or read the audio data from the USB endpoint of the wireless data terminal and transmit the audio data to the baseband processing module. The USB standard batch transmission mode is characterized by supporting a large amount of data transmission in an indefinite time, ensuring that the data can be transmitted correctly, but does not guarantee the transmission bandwidth and delay, so the real-time performance of the data transmission is not good . In addition, for the audio data transmitted in the mass transfer mode of USB standard, the terminal device processes the audio data without a standard device driver. If the audio data needs to be processed, the terminal device needs to use an application user interface (UI) Realization, its realization process: ¾ mouth:

[0007] The PCM code stream sent from the wireless data terminal to the USB endpoint of the terminal device is read by the USB driver on the terminal device side and read and processed by the USB driver of the terminal device from the UI of the terminal device. Transfer to physical sound card. The physical sound card decodes the transmitted PCM code stream, and then the analog audio signal is processed by A / D conversion and the like, and finally the analog audio signal is sent to the loudspeaker for playing. The physical sound card may be a sound card or a USB sound card of a Peripheral Component Interconnect (PCI) interface. Here, the function of the USB drive on the terminal device side is to read out the audio data read from the USB endpoint of the terminal device to the UI or to obtain the audio data from the UI and transmit it to the USB endpoint of the terminal device.

[0008] Based on the above description, it can be seen that in the implementation scheme of VOUSB, the USB audio data transmission channel between the wireless data terminal and the terminal device merely serves as a data transmission channel, thus causing a problem that no special optimization

is performed on the characteristics of the audio data transmission , In real time and other aspects of the actual application of VOUSB effect. Content of the invention

[0009] In view of this, the main object of the present invention is to provide a method and an apparatus for implementing audio data transmission of a Universal Serial Bus (USB) terminal of a data terminal by making full use of the powerful capability of a terminal device for processing audio data and enhancing the practical application effect of the VOUSB.

[0010] In order to solve the above technical problem, the technical solution of the present invention is implemented as follows:

[0011] A method for implementing universal serial bus audio data transmission of a wireless data terminal enumerates Universal Serial Bus (USB) audio data transmission channels between the wireless data terminal and the terminal device as

[0012] USB sound card device, the method includes: the device accesses the USB sound card device through its own audio device driver to obtain audio data;

[0013] The terminal device sends audio data to the USB sound card device through its own audio device driver, and the wireless data terminal receives the audio data through the USB sound card device.

[0014] The enumerating the USB audio data transmission channel between the wireless data terminal and the terminal device as a USB sound card device includes:

[0015] The wireless data terminal defines the USB endpoint of the wireless data terminal transmitting the audio data as a sound card and connects the USB endpoint of the wireless data terminal to the USB endpoint of the terminal device through the USB data line; the terminal device requests the wireless data terminal to obtain the device description of the connected sound card Character, configuration descriptor and descriptor set. After receiving the request, the wireless data terminal sends a device descriptor, a configuration descriptor and a descriptor set to the terminal device;

[0016] The terminal device loads the corresponding audio device driver conforming to the USB specification according to the obtained device descriptor, configuration descriptor and descriptor set, and drives the audio device driver to configure the sound card to obtain the USB sound card device.

[0017] The terminal device includes an audio device driver, a user interface (UI), and a physical sound card. The terminal device accesses a USB sound card device by using its own audio device to obtain audio data. The method includes: accessing, by the audio device driver, a USB sound card

device interface The USB sound card device reads and releases a pulse code modulation (PCM) code stream transmitted to a USB sound card device; the UI accesses an audio device driver through an audio device interface and transmits the PCM code stream to a physical sound card.

[**0018**] The terminal device includes an audio device driver, a UI and a physical sound card,

[**0019**] The terminal device is driven by its own audio device to send audio data to the USB sound card device, which includes: a physical sound card obtains a PCM code stream from an analog audio signal; a UI acquires the PCM code stream from a physical sound card and sends the PCM code stream through an audio device driven audio device interface The PCM code stream is transmitted to the audio device driver, and the audio device driver sends the PCM code stream to the USB sound card device. The baseband processing module of the wireless data terminal transmits the processed PCM code stream to the USB driver of the wireless data terminal side of the USB sound card device.

[**0020**] Receiving, by the wireless data terminal, audio data by using a USB sound card device, comprising: sending, by the wireless data terminal, a PCM code stream transmitted to a USB data point of the wireless data terminal.

[**0021**] An apparatus for implementing audio data transmission of a universal serial bus of a wireless data terminal includes a wireless data terminal for sending audio data to the terminal device through a USB sound card device and for receiving audio data from the terminal device through the USB sound card device.

[**0022**] Enumerating the USB audio data transmission channel between the wireless data terminal and the terminal device as a USB sound card device for transmitting audio data between the wireless data terminal and the terminal device;

[**0023**] The terminal device is configured to access the USB sound card device through its own audio device driver to obtain the audio data from the wireless data terminal device and also to send the audio data to the USB sound card device through its own audio device driver.

[**0024**] The USB sound card device comprises a wireless data terminal USB driver, a wireless data terminal USB endpoint and a terminal device USB endpoint,

[**0025**] The USB driver of the wireless data terminal is connected to the baseband processing module of the wireless data terminal; the USB endpoint of the wireless data terminal is connected to the USB endpoint of the terminal device through the USB data line;

[0026] The terminal device USB endpoint is connected to an audio device driver of the terminal device.

[0027] When the terminal device is used to obtain audio data from the wireless data terminal by accessing the USB sound card device through its own audio device driver, the terminal device includes:

[0028] An audio device driver for accessing the USB endpoint of the terminal device by accessing the USB sound card device interface and reading and releasing the PCM code stream transmitted to the USB endpoint of the terminal device;

[0029] UI for accessing the audio device driver via the audio device interface to stream the PCM code to the physical sound card;

[0030] Physical sound card, used to get analog audio signal from PCM stream.

[0031] When the terminal device is configured to send audio data to a USB sound card device by using its own audio device driver, the terminal device includes:

[0032] Physical sound card for PCM stream from analog audio signal;

[0033] UI for acquiring the PCM code stream from the physical sound card and transmitting the PCM code stream to the audio device driver through the audio device driver audio device interface;

[0034] The audio device driver is configured to send a PCM code stream to the USB endpoint of the terminal device.

[0035] As can be seen from the above, compared with the prior art, the present invention provides a method and apparatus for implementing universal serial bus audio data transmission of a wireless data terminal. According to the characteristics of audio data transmission, the USB audio data transmission channel is abstracted And optimize, make full use of the powerful ability of terminal equipment to process audio data, and enhance the practical application effect of VOUSB. In addition, the solution of the present invention also has the following features and advantages:

[0036] First, the USB audio data transmission channel between the wireless data terminal and the terminal device is enumerated by using a standard USB AUDIO CLASS defined by the USB specification as a USB sound card device to transmit audio data. The operating system on the widely used terminal device Both provide an audio device driver implementation compliant with the USB specification by default so that the audio device driver accesses the USB endpoint of the

terminal device in a manner that accesses the USB sound card device interface and the audio device driver reads the audio data read from the USB endpoint And release.

[0037] Secondly, the transmission of audio data using the USB standard synchronous transmission method has good real-time performance, and the terminal device has a standard driver for the synchronous transmission mode, that is, an audio device driver, reading and releasing audio data from the USB endpoint of the terminal device Is done in the audio device driver. The processing priority is higher than that in the application UI. Therefore, when the operating system of the terminal device is heavily loaded, audio data processing still has very good real-time performance.

[0038] Finally, the UI accesses the audio device driver through the audio device interface and transmits the audio data that has been released to the physical sound card. Because the UI accesses the audio device driver through the audio device interface, the UI is less dependent on the audio device driver. The audio device interface is a standard interface without concern for the details of the underlying audio device driver. The OS portability makes the UI Achieve more simple and reliable. BRIEF DESCRIPTION OF THE DRAWINGS FIG

[0039] Figure 1 is a schematic view of the implementation of VOUSB in the prior art;

[0040] 2 is a schematic structural diagram of an apparatus for implementing audio data transmission of a universal serial bus of a wireless data terminal according to the present invention;

[0041] FIG. 3 is a schematic diagram of abstracting a USB audio data transmission channel into a USB sound card device in the present invention;

[0042] FIG. 4 is a flow chart of transmitting a wireless data terminal as an audio data receiving party in the present invention; and FIG. 5 is a flow chart of transmitting a wireless data terminal as an audio data transmitting party in the present invention. DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS The present invention will be described in further detail below with reference to the accompanying drawings and specific embodiments.

[0043] In the present invention, an apparatus for implementing audio data transmission of a universal serial bus (USB) of a data terminal is provided. As shown in FIG. 2, the apparatus mainly includes a wireless data terminal, a USB sound card device, and a terminal device. among them,

[0044] The wireless data terminal is configured to send the audio data to the terminal device through the USB sound card device and to receive the audio data from the terminal device through the USB sound card device;

[0045] Enumerating the USB audio data transmission channel between the wireless data terminal and the terminal device as a USB sound card device for transmitting audio data between the wireless data terminal and the terminal device;

[0046] The terminal device is configured to obtain audio data from the wireless data terminal by accessing the USB sound card device through its own audio device driver and also to send the audio data to the USB sound card device through its own audio device driver.

[0047] Specifically, the audio device driver of the terminal device accesses the USB endpoint of the terminal device by accessing the USB sound card device interface, reads and releases the audio data transmitted to the USB endpoint of the terminal device, and then further transmits the audio data by the UI to Physical sound card for decoding, D / A conversion, and finally by the speaker to play; on the microphone acquisition, and further from the physical sound card A / D conversion, encoded audio data from the UI to the audio device driver compression, after the audio device The driver is returned to the endpoint USB endpoint by accessing the USB sound card device interface.

[0048] 3 is a schematic diagram of abstracting a USB audio data transmission channel into a USB sound card device according to the present invention. As shown in FIG. 3, in comparison with FIG. 1, in the present invention, a USB sound card application method in a USB standard is used to connect a wireless data terminal and a terminal device Between the USB audio data transmission channel abstract into a USB sound card device. The USB audio data transmission channel refers to an audio data transmission channel including a USB driver on a wireless data terminal side, a USB endpoint of a wireless data terminal, a USB endpoint of a terminal device, and a USB data line between two USB endpoints. The key to realize the USB audio data transmission channel abstracted into a USB sound card device is that the USB audio data transmission channel is adopted, and the enumeration is implemented through the following steps: First, the wireless data terminal side sends the wireless data terminal USB The endpoint is defined as a sound card, and the USB endpoint of the wireless data terminal is connected to the USB endpoint of the terminal device through a USB data line; afterwards, the terminal device sends a request to the wireless data terminal to request to obtain a device descriptor, a configuration descriptor, Descriptor set and other information. After receiving the request, the wireless data terminal sends the requested device descriptor, configuration descriptor and descriptor set information to the terminal device. Then, the terminal device acquires the information and determines from the terminal device After the USB driver is provided, the audio device driver corresponding to the USB specification is loaded. Finally, after obtaining the descriptors, the terminal device considers that the information of the connected sound card is complete, and the sound device is driven by the audio device to be configured and configured successfully Can be real Audio data transmission between the wireless terminal and the data terminal equipment. At this point, the enumeration process is completed, completing the enumeration of the USB audio data transmission channel into a USB sound card

device. The wireless data terminal is connected with the USB driver of the wireless data terminal side of the USB sound card device; the terminal device is connected with the USB endpoint of the terminal device of the USB sound card device.

[**0049**] Different from the audio data processing capability of the physical sound card such as a normal USB sound card and the processing capability capable of sending the processed audio data directly to the speaker, the USB sound card device has the same access interface as the physical sound card and Use, the user can regard the USB sound card device as an actual physical sound card, but in fact, the USB sound card device only has audio data transfer capabilities, but no real audio data processing capabilities, if you also need to receive Of the audio data for processing, you need to rely on the terminal device on the physical sound card to achieve. For audio data sent by the terminal device to the wireless data terminal, the wireless data terminal will be transmitted to the remote device over the wireless communication network. The remote device may be a wireless data terminal or a terminal device. If the remote device still needs to process the received audio data, for the case that the remote device is a terminal device, the audio data is directly played by using the physical sound card on the terminal device and played back; in the case that the remote device is a wireless data terminal , The received audio data is transmitted to the unprocessed audio card processing audio data and play.

[**0050**] As the USB audio data transmission channel between the wireless data terminal and the terminal device is enumerated into a USB sound card device by using a standard USB AUDIO CLASS defined by the USB specification for audio data transmission and the operation on the widely used terminal device By default, the system provides an audio device driver that conforms to the USB specification. Therefore, for the audio data of the USB endpoint of the terminal device sent from the wireless data terminal to the USB sound card device, the audio device driver accesses the USB sound card device interface by accessing The terminal device USB endpoint; the audio device driver reads and releases the audio data sent to the USB endpoint of the terminal device when accessing the USB endpoint of the terminal device. Compared with the existing audio data read and released by the application UI, Audio device driver to read and release higher priority, therefore, even in the terminal operating system load is heavy, the audio data processing is still very good real-time; audio device driver in addition to access the terminal device USB endpoint Upward also provides audio device interface The audio device interface is a standard interface. When accessing the audio device interface, the UI does not need to pay attention to the details of the underlying audio device driver implementation, and the operating system portability is good. The UI can access the audio device driver through the audio device interface and transmit the audio data To the physical sound card, reducing the UI dependence on the audio device driver, the UI is more simple and reliable to achieve.

[0051] Specifically, when the terminal device obtains the audio data through the USB sound card device, the audio device driver is configured to access the USB endpoint of the terminal device by accessing the USB sound card device interface, read the PCM code stream transmitted to the USB endpoint of the terminal device, and Release; UI for accessing the audio device driver through the audio device interface, streaming the PCM code to the physical sound card; and physical sound card for obtaining the analog audio signal from the PCM code stream.

[0052] When the terminal device sends the audio data through the USB sound card device, the physical sound card is used to obtain the PCM stream from the analog audio signal; the UI is used to obtain the PCM stream from the physical sound card and transmit the PCM stream through the audio device-driven audio device interface To an audio device driver; and the audio device driver is configured to send a PCM code stream to the USB endpoint of the terminal device.

[0053] The use of USB sound card device audio data transmission process shown in Figure 4, Figure 5.

[0054] 4 is a flow chart of a wireless data terminal as a receiver of audio data. As shown in FIG. 4, the transmission of the audio data includes the following steps:

[0055] Step 401: The air interface of the wireless data terminal receives the analog audio signal sent by the remote device through the wireless communication network, and transmits the analog audio signal to a hardware such as a radio frequency for demodulation. After that, the baseband processing module amplifies the demodulated audio data and Digital filtering, PCM stream.

[0056] Step 402: The PCM stream obtained after the processing is transmitted from the baseband processing module of the wireless data terminal to the USB driver on the wireless data terminal side of the USB sound card device. Thereafter, according to the USB standard synchronous transmission mode, the PCM code flows through the wireless data terminal USB endpoint And the USB data cable is transferred to the USB endpoint of the USB sound card device.

[0057] Step 403: After the PCM code stream is transmitted to the USB endpoint of the terminal device, the audio device driver of the terminal device accesses the USB endpoint of the terminal device by accessing the USB sound card device interface and reads the PCM code stream transmitted to the USB endpoint of the terminal device After fetching and releasing, the UI accesses the audio device driver through the audio device interface and streams the PCM stream to the physical sound card.

[0058] Step 404: The physical sound card decodes the transmitted PCM code stream to obtain an analog audio signal after being processed such as D / A conversion. Finally, the analog audio signal is transmitted to a speaker for playing.

[0059] Figure 5 is a wireless data terminal as a sender of audio data transmission flow chart, as shown in Figure 5, the audio data transmission includes the following steps:

[0060] Step 501: The microphone of the terminal device transmits the collected analog audio signal to the physical sound card, and performs A / D conversion, encoding and the like on the physical sound card to obtain the digital audio signal in the form of PCM code stream.

[0061] Step 502: The UI of the terminal device obtains the PCM code stream from the physical sound card and transmits the PCM code stream to the audio device driver through the audio device-driven audio device interface, and the PCM device stream is compressed by the audio device driver. Thereafter, the audio device driver To access the USB sound card device interface PCM stream back to the USB sound card device endpoint USB device. Step 503: After the PCM code stream is transmitted to the USB endpoint of the terminal device of the USB sound card device, the PCM code is transmitted to the USB endpoint of the wireless data terminal of the USB sound card device via the USB data line according to the USB standard synchronous transmission mode.

[0062] Step 504: The baseband processing module of the wireless data terminal obtains the PCM code stream transmitted to the USB endpoint of the wireless data terminal through the USB driver of the wireless data terminal, amplifies and digitally filters the PCM stream, and then modulates it by radio frequency to obtain an analog audio signal. Finally, From the air interface via wireless communication network to the remote device.

[0063] The foregoing descriptions are merely preferred embodiments of the present invention and are not intended to limit the protection scope of the present invention.

1.

The claims

1、 A method for implementing universal serial bus (USB) audio data transmission in a wireless data terminal is enumerated as a USB sound card device by a universal serial bus (USB) audio data transmission channel between the wireless data terminal and the terminal device. Including: accessing, by the device through its own audio device driver, the USB sound card device to obtain audio data; The terminal device sends audio data to the USB sound card device through its own audio device driver, and the wireless data terminal receives the audio data through the USB sound card device.

2、 The method according to claim 1, wherein enumerating the USB audio data transmission channel between the wireless data terminal and the terminal device as a USB sound card device comprises: sending, by the wireless data terminal, a wireless data terminal transmitting the audio data The USB endpoint is defined as a sound card, and the USB endpoint of the wireless data terminal is connected to the USB endpoint of the terminal device via the USB data line; the terminal device requests the wireless

data terminal to obtain a device descriptor, a configuration descriptor, a descriptor set, After receiving the request, the data terminal sends a device descriptor, a configuration descriptor and a descriptor set to the terminal device;

The terminal device loads the corresponding audio device driver conforming to the USB specification according to the obtained device descriptor, configuration descriptor and descriptor set, and drives the audio device driver to configure the sound card to obtain the USB sound card device.

3、 The method according to claim 1, wherein the terminal device comprises an audio device driver, a user interface (UI) and a physical sound card,

The terminal device accesses a USB sound card device through its own audio device to obtain audio data. The method includes: accessing, by the audio device driver, a USB sound card device interface to access the USB sound card device; performing pulse code modulation (PCM) on the USB sound card device) Code stream to read and release; UI through the audio device interface to access the audio device driver, the PCM code stream to the physical sound card. 4. The method according to claim 1, wherein the terminal device comprises an audio device driver, a UI and a physical sound card,

The terminal device is driven by its own audio device to send audio data to the USB sound card device, which includes: a physical sound card obtains a PCM code stream from an analog audio signal; a UI acquires the PCM code stream from a physical sound card and sends the PCM code stream through an audio device driven audio device interface The PCM code stream is transmitted to the audio device driver, and the audio device driver sends the PCM code stream to the USB sound card device.

5、 The method according to any one of claims 1 to 4, wherein the wireless data terminal sends the audio data to the terminal device through the USB sound card device, comprising: the baseband

processing module of the wireless data terminal transmits the PCM stream obtained by the processing To the wireless data terminal side USB drive of the USB sound card device.

6、 The method according to any one of claims 1 to 4, wherein the wireless data terminal receives the audio data through the USB sound card device, comprising: a PCM code stream of a baseband processing module terminal USB endpoint of the wireless data terminal.

7、 An apparatus for implementing audio data transmission of a Universal Serial Bus (USB) terminal of a wireless data terminal, comprising:

The wireless data terminal is configured to send audio data to the terminal device through the USB sound card device and to receive the audio data from the terminal device through the USB sound card device.

Enumerating the USB audio data transmission channel between the wireless data terminal and the terminal device as a USB sound card device for transmitting audio data between the wireless data terminal and the terminal device;

The terminal device is configured to access the USB sound card device through its own audio device driver to obtain the audio data from the wireless data terminal device and also to send the audio data to the USB sound card device through its own audio device driver.

8、 The apparatus according to claim 7, wherein the USB sound card device comprises: a wireless data terminal-side USB driver, a wireless data terminal USB endpoint and a terminal device USB endpoint,

The USB driver of the wireless data terminal is connected to the baseband processing module of the wireless data terminal; the USB endpoint of the wireless data terminal is connected to the USB endpoint of the terminal device through the USB data line;

The terminal device USB endpoint is connected to an audio device driver of the terminal device.

9、 The apparatus according to claim 8, wherein when the terminal device is configured to obtain audio data from the wireless data terminal by accessing the USB sound card device through its own audio device driver, the terminal device comprises:

An audio device driver for accessing the USB endpoint of the terminal device by accessing the USB sound card device interface and reading and releasing the PCM code stream transmitted to the USB endpoint of the terminal device;

UI for accessing the audio device driver via the audio device interface to stream the PCM code to the physical sound card;

Physical sound card, used to get analog audio signal from PCM stream.

10、 The apparatus according to claim 8, wherein when the terminal device is configured to send audio data to the USB sound card device by using its own audio device driver, the terminal device comprises:

Physical sound card for PCM stream from analog audio signal;

UI for acquiring the PCM code stream from the physical sound card and transmitting the PCM code stream to the audio device driver through the audio device driver audio device interface;

The audio device driver is configured to send a PCM code stream to the USB endpoint of the terminal device.

Espacenet

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COMMUNICATION SYSTEM

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Classification: **- international:** ***H04M11/00; H04N7/14***
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Abstract of JP2010263326 (A)

PROBLEM TO BE SOLVED: To obtain a communication system which is capable of transmitting an image signal even in the case that the communication load of a communication line is high. ;SOLUTION: A communication system 1 includes a PC 4 including a monitor 30, a terminal device 10 including a monitor 28, a communication line 13 for connecting the PC 4 and the terminal device 10, a router 5 which includes an encoder 51 for compressing and encoding an image signal and transmitting an image signal including the whole or a part of an image on the monitor 30 to the terminal device 10 via the communication line 13 after compression and encoding in the encoder 51, a communication load detection part 72 for detecting the communication load relating to the communication line 13, and an encoder setting part 62 for setting a compression rate of the image signal in the encoder 51 on the basis of the result of detection in the communication load detection part 72. ;COPYRIGHT: (C)2011,JPO&INPIT

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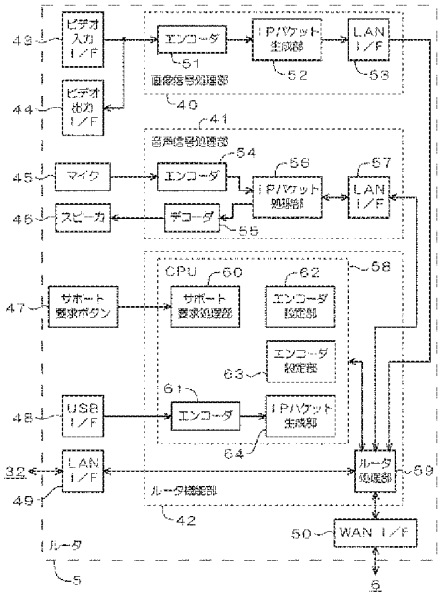
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(54)【発明の名称】通信システム

(57)【要約】
【課題】通信回線の通信負荷が高い場合であっても画像信号を送信することが可能な通信システムを得る。
【解決手段】通信システム１は、モニタ３０を有するＰＣ４と、モニタ２８を有する端末装置１０と、ＰＣ４と端末装置１０とを接続する通信回線１３と、画像信号を圧縮符号化するエンコーダ５１を有し、モニタ３０の画像の全部又は一部を含む画像信号を、エンコーダ５１によって圧縮符号化した後に、通信回線１３を介して端末装置１０に送信するルータ５と、通信回線１３に関する通信負荷を検出する通信負荷検出部７２と、通信負荷検出部７２による検出の結果に基づいて、エンコーダ５１における画像信号の圧縮率を設定するエンコーダ設定部６２とを備える。
【選択図】図３



【特許請求の範囲】
【請求項1】
第１のモニタを有する第１の端末装置と、
第２のモニタを有する第２の端末装置と、
前記第１の端末装置と前記第２の端末装置とを接続する通信回線と、
画像信号を圧縮符号化する第１の圧縮符号化手段を有し、前記第１のモニタの画像の全部又は一部を含む画像信号を、前記第１の圧縮符号化手段によって圧縮符号化した後に、前記通信回線を介して前記第２の端末装置に送信する通信装置と、
前記通信回線に関する通信負荷を検出する検出手段と、
前記検出手段による検出の結果に基づいて、前記第１の圧縮符号化手段における前記画像信号の圧縮率を設定する第１の設定手段と
を備える、通信システム。
【請求項2】
前記第１の設定手段は、前記検出手段による検出の結果に基づいて、前記第１の圧縮符号化手段により圧縮符号化された画像信号の、フレームレート及び色深度の少なくとも一方を設定する、請求項１に記載の通信システム。
【請求項3】
前記通信装置に接続される撮像手段をさらに備え、
前記通信装置は、前記撮像手段によって撮像された前記第１のモニタの画像に関する画像信号を前記第２の端末装置に送信する、請求項１又は２に記載の通信システム。
【請求項4】
前記通信装置は音声入力部及び音声出力部をさらに有し、
前記通信装置は、
前記音声入力部から入力された音声信号を、前記通信回線を介して前記第２の端末装置に送信し、
前記第２の端末装置から前記通信回線を介して受信した音声信号を、前記音声出力部から出力する、請求項１～３のいずれか一つに記載の通信システム。
【請求項5】
前記通信装置は、音声信号を圧縮符号化する第２の圧縮符号化手段をさらに有し、前記音声入力部から入力された前記音声信号を、前記第２の圧縮符号化手段によって圧縮符号化した後に、前記通信回線を介して前記第２の端末装置に送信し、
前記検出手段による検出の結果に基づいて、前記第２の圧縮符号化手段における前記音声信号の圧縮率を設定する第２の設定手段をさらに備える、請求項４に記載の通信システム。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、通信システムに関し、特に、ある端末装置のモニタに表示されている画像に関する画像信号を、通信回線を介して他の端末装置に送信することにより、当該画像を当該他の端末装置のモニタに表示させる、リモートディスプレイシステムに関する。
【背景技術】
【0002】
下記特許文献１には、コンピュータ端末及び電話機と、ＩＳＤＮ回線を用いた通信ネットワークとの間に接続されるリモートディスプレイ装置が開示されている。当該リモート

ディスプレイ装置は、ＲＧＢ－ＮＴＳＣ変換部、ＭＰＥＧ画像コーデック／デコーデック部、音声信号符号／復号化部、及び多重／分割化部を備えて構成されている。コンピュータ端末のディスプレイに表示されたＲＧＢ画像信号は、まずＲＧＢ－ＮＴＳＣ変換部によってＮＴＳＣ信号に変換され、次にＭＰＥＧ画像コーデック／デコーデック部によって符号化され、次に多重／分割化部によって電話機からの音声信号と多重化された後、その多重化信号が通信ネットワークに向けて送信される。

【図面の簡単な説明】

【0018】

【図1】本発明の実施の形態に係る通信システムの全体構成を模式的に示すブロック図である。

【図2】ＰＣの構成を模式的に示す図である。

【図3】ルータの構成を示すブロック図である。

【図4】終端装置の構成を示すブロック図である。

【図5】通信装置の構成を示すブロック図である。

【図6】制御装置の構成を示すブロック図である。

【図7】ユーザがオペレーションセンタにサポートを求める場合の処理の流れを示すフローチャートである。

【図8】ルータとの接続が完了したＰＣを模式的に示す図である。

【図9】図７に対応して、ユーザがオペレーションセンタにサポートを求める場合の処理の流れを示すフローチャートである。

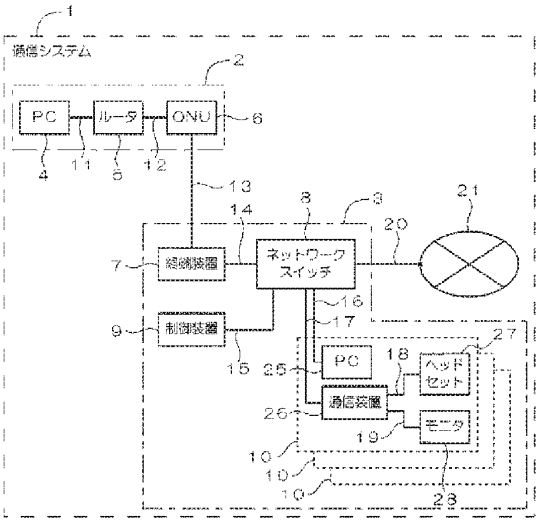
【図10】図８に対応して、ルータとの接続が完了したビデオカメラを模式的に示す図である。

【符号の説明】

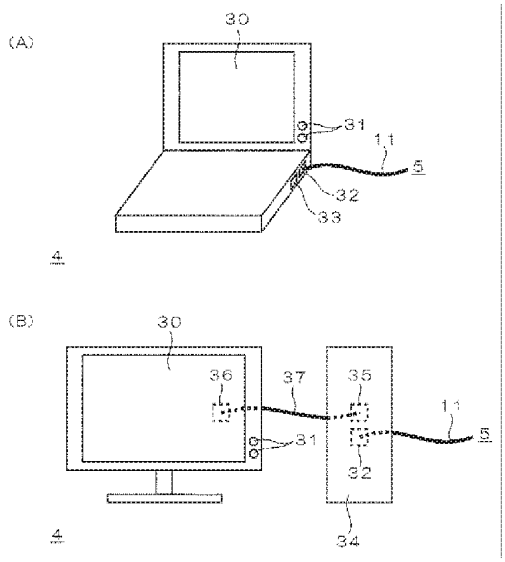
【0082】

１　通信システム
４，２５　ＰＣ
５　ルータ
９　制御装置
１０　端末装置
１３　通信回線
２６　通信装置
２８，３０　モニタ
４５　マイク
４６　スピーカ
５１，５４，６１　エンコーダ
６２，６３　エンコーダ設定部
７０　通信負荷検出部
９２　設定処理部
１０３　ビデオカメラ

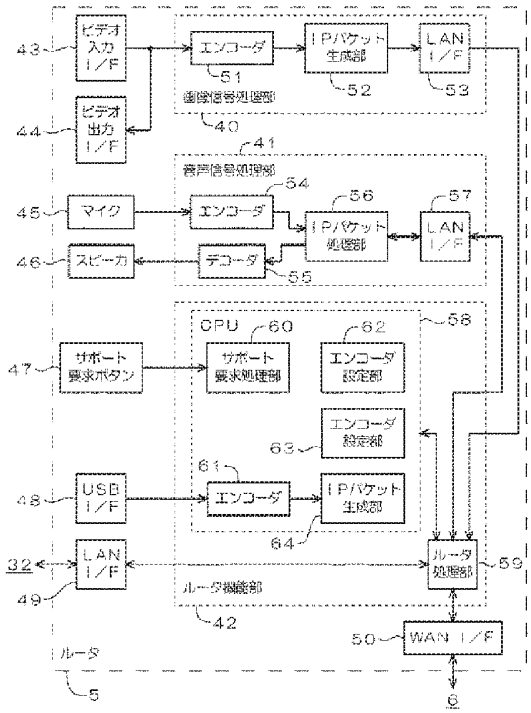
【図1】


1
通信システム
2
PC
ルータ
ONU
6
4
11
5
12
13
14
8
3
21
20
7
通信装置
ネットワーク
スイッチ
16
17
9
制御装置
27
PC
18
ヘッド
セット
15
25
通信装置
26
モニタ
19
10
10
10
28

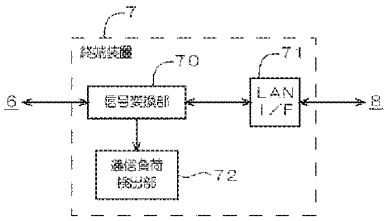
【図2】



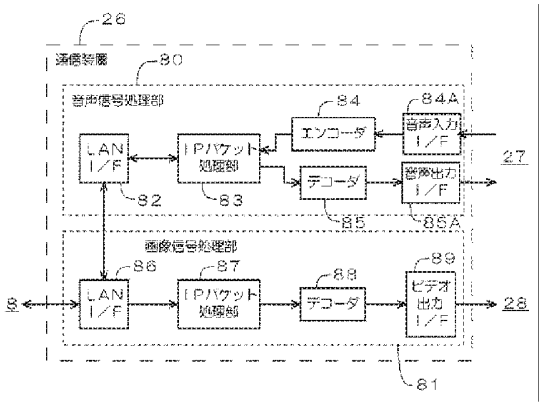
【図3】


ビデオ入力I/F
43
ビデオ出力I/F
44
マイク
45
スピーカ
46
サポート要求ボタン
47
USB I/F
48
LAN I/F
49
32
エンコーダ
51
IPパケット生成部
52
LAN I/F
53
画像信号処理部
40
41
音声信号処理部
54
エンコーダ
56
IPパケット処理部
57
LAN I/F
デコーダ
55
CPU
60
58
サポート要求処理部
62
エンコーダ設定部
63
エンコーダ設定部
61
エンコーダ
IPパケット生成部
64
ルータ処理部
59
ルータ機能部
42
WAN I/F
50
ルータ
5
6

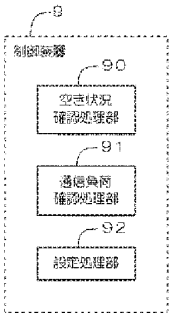
【図4】



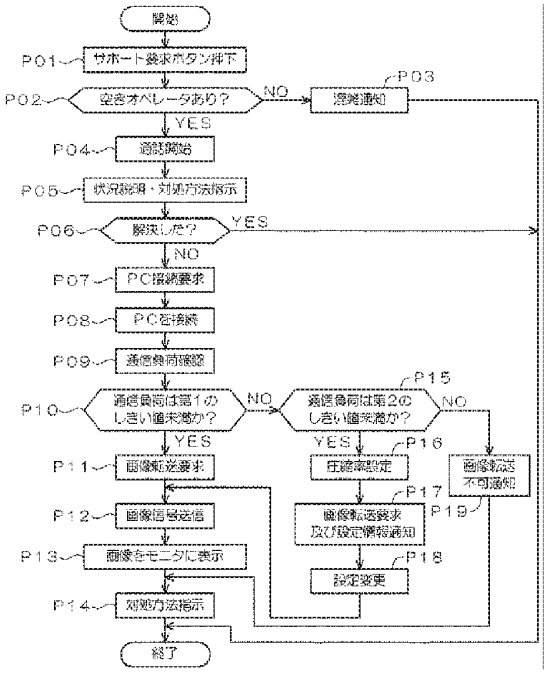
【図5】


26
通信装置
80
音声信号処理部
84
84A
エンコーダ
音声入力
I／F
LAN
I／F
IPパケット
処理部
デコーダ
音声出力
I／F
27
82
83
85
85A
画像信号処理部
86
87
88
89
LAN
I／F
IPパケット
処理部
デコーダ
ビデオ
出力
I／F
28
8
81

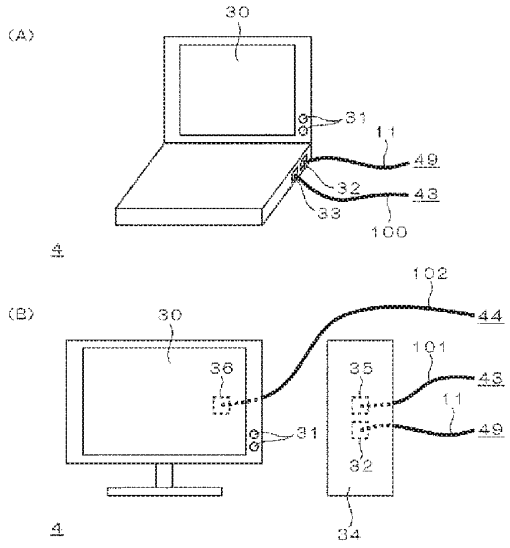
【図6】



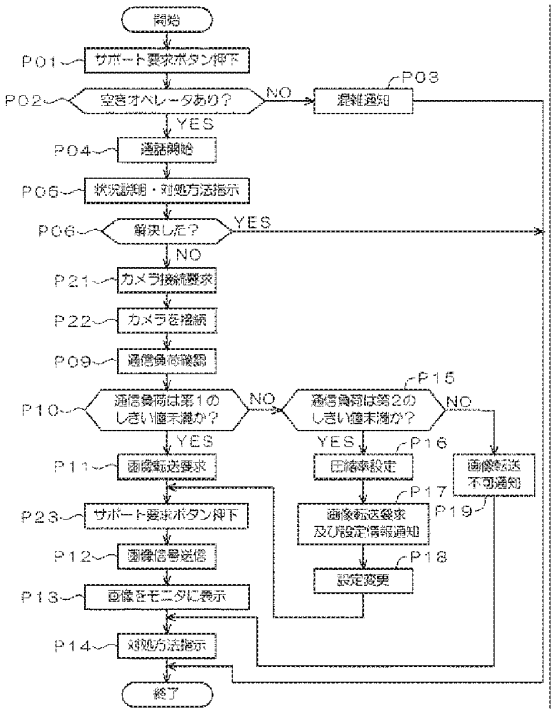
【図7】


開始
P01
サポート要求ボタン押下
P02
空きオペレータあり？
NO
P03
待機通知
YES
P04
通話開始
P05
状況説明・対処方法指示
P06
解決した？
YES
NO
P07
PC接続要求
P08
PCを接続
P09
通信負荷確認
P10
通信負荷は第1のしきい値未満か？
NO
P15
通信負荷は第2のしきい値未満か？
NO
YES
YES
P11
画像転送要求
P16
圧縮率設定
画像転送不可通知
P12
画像信号送信
P17
画像転送要求及び設定情報通知
P19
P13
画像をモニタに表示
P18
設定変更
P14
対処方法指示
終了

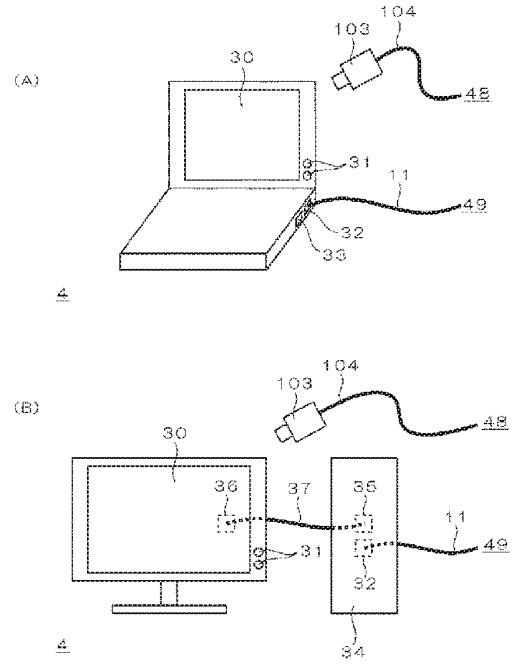
【図8】



【図9】


開始
P01
サポート要求ボタン押下
P02
空きオペレータあり？
NO
P03
混雑通知
YES
P04
通話開始
P05
状況説明・対処方法指示
P06
解決した？
YES
NO
P21
カメラ接続要求
P22
カメラを接続
P09
通信機器情報
P10
通信機器は第1のしきい値未満か？
NO
P15
通信機器は第2のしきい値未満か？
NO
YES
YES
P11
画像転送要求
P16
圧縮率設定
画像転送不可通知
P17
P19
P23
サポート要求ボタン押下
画像転送要求及び設定情報通知
P12
画像信号送信
P18
設定変更
P13
画像をモニタに表示
P14
対処方法指示
終了

【図10】


(A)
104
103
30
48
31
11
49
32
33
4
(B)
104
103
48
30
36
37
35
11
31
49
32
34
4

Espacenet

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IMAGE PROJECTION SYSTEM, IMAGE PROJECTION DEVICE AND PROGRAM

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Applicant(s): BROTHER IND LTD ± (BROTHER IND LTD)

Classification: - international: ***G03B21/00; G06F3/048; G06F3/14; G06T3/00; G09G5/00; G09G5/377; H04N5/74***
- cooperative: **G03B21/006 (EP); H04N9/3179 (EP);** G09G2340/12 (EP); G09G3/001 (EP); G09G5/14 (EP)

Application number: JP20070249624 20070926 Global Dossier

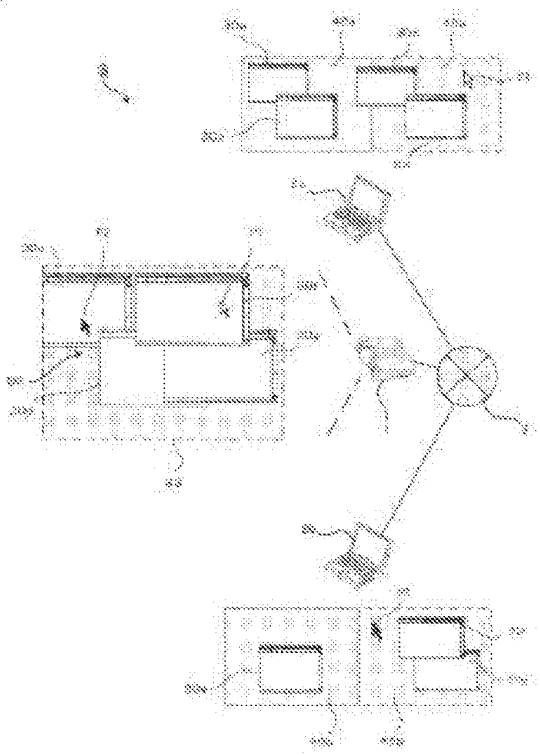
Priority number(s): JP20070249624 20070926

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Abstract of JP2009080663 (A)

PROBLEM TO BE SOLVED: To provide an image projection system which smoothly performs collaboration and/or information sharing among a plurality of persons by reducing a load to a communication channel and enabling an image data transmitted from another terminal to be edited and operated. ;SOLUTION: In the image projection system, the image projection device includes an image acquisition unit acquiring an image data residing on a predetermined display region in each terminal device, an image processing unit synthesizing the acquired image data, an image projection unit projecting an image based on the synthesized image data, and an operation instruction processing unit transmitting an image operation instruction to the terminal device having transmitted the image data as an operation target when receiving the image operation instruction. The terminal device includes a memory unit storing a data file, an image generation unit generating an image data based on the data file, a predetermined region image transmission unit transmitting to the image projection device the image data corresponding to a part or the whole of the image when the image resides in the predetermined display region, and an editing unit editing the data file according to the image operation instruction when receiving the image operation instruction from the image projection device. ;COPYRIGHT: (C)2009,JPO&INPIT

[fig1]



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G06F	3/048	(2006.01)	G06F	3/048	655A	5C058
G09G	5/00	(2006.01)	G09G	5/00	555D	5C082

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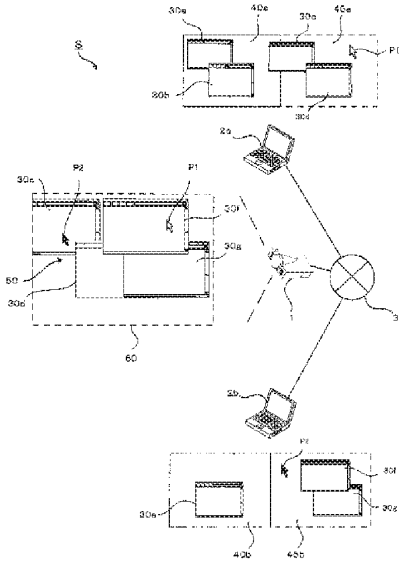
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5B057 BA23 CA12 CA16 CB12 CB16 CE08 CH16 CH18 CH20
最終頁に続く

(54)【発明の名称】画像投影システム、画像投影装置及びプログラム

(57)【要約】
【課題】通信経路にかかる負荷を軽減し、他の端末装置から送信された画像データの編集操作を可能とすることで、複数人による共同作業や情報の共有を円滑に行う画像投影システムの提供。
【解決手段】画像投影装置は、各端末装置の所定表示領域にある画像の画像データを取得する画像取得部と取得した画像データを合成する画像処理部と合成した画像データに基づく画像を投影する画像投影部と画像操作命令を取得したとき操作対象の画像データを送信した端末装置へ画像操作命令を送信する操作命令処理部とを備え、端末装置は、データファイルを記憶する記憶部とデータファイルに基づく画像データを生成する画像生成部と画像が所定表示領域にあるときその画像の一部又は全部の画像データを画像投影装置へ送信する所定領域画像送信部と画像投影装置から画像操作命令を受信したとき画像操作命令に応じてデータファイルを編集する編集部とを備えた画像投影システム。
【選択図】図１



【特許請求の範囲】
【請求項1】
複数の端末装置と、これら複数の端末装置から通信経路を介して画像データを取得し、この画像データに基づいた画像を投影する画像投影装置とを備えた画像投影システムにおいて、
前記画像投影装置は、
各前記端末装置の所定表示領域にある画像の画像データを前記通信経路を介して取得する画像取得部と、
前記複数の端末装置の所定表示領域にある画像の画像データを合成する画像処理部と、
前記画像処理部で合成した画像データに基づいた画像を投影する画像投影部と、
前記画像投影部で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置へ、この画像操作命令を前記通信経路を介して送信する操作命令処理部と、を備え、
前記端末装置は、
データファイルを記憶する記憶部と、
前記データファイルに基づいた画像データを生成する画像生成部と、
前記画像生成部で生成した画像データに基づく画像の位置が所定表示領域にあるときに、その画像の一部又は全部の画像データを前記通信経路を介して前記画像投影装置へ送信する所定領域画像送信部と、
前記画像投影装置から前記画像操作命令を前記通信経路を介して受信したとき、この画像操作命令に応じて前記データファイルを編集する編集部と、を備えたことを特徴とする画像投影システム。
【請求項2】
前記端末装置は、
前記画像生成部で生成した画像データに基づく画像を表示可能な表示部と、
前記所定表示領域として、前記表示部の表示領域に隣接した仮想表示領域を設定する仮想表示領域設定部と、を備える
ことを特徴とする請求項１に記載の画像投影システム。
【請求項3】
前記端末装置は、
前記画像投影装置で投影されている前記端末装置の所定表示領域にある画像を操作するための操作部と、
前記操作部が所定操作されたときに、その操作に応じた画像操作命令を前記画像投影装置へ前記通信経路を介して送信する操作命令送信部と、を備えたことを特徴とする請求項１又は請求項２に記載の画像投影システム。
【請求項4】
前記端末装置は、
前記画像投影装置で投影されている画像を指示するための指示部を備え、
前記操作命令送信部は、前記指示部が所定操作されたときに、その操作に応じた画像指示命令を前記通信経路を介して前記画像投影装置へ送信し、
前記画像投影装置の画像処理部は、前記端末装置から画像指示命令を受信したとき、この画像指示命令に基づいた位置にポインタ画像を、前記複数の端末装置の所定表示領域にある画像の画像データと共に合成することを特徴とする請求項３に記載の画像投影システム。
【請求項5】
前記端末装置の制御部は、
前記画像生成部によって前記編集後のデータファイルに基づいて前記所定表示領域にある画像データが生成される毎に、前記所定表示領域にある画像の画像データを前記通信経路を介して前記画像投影装置へ送信する

ことを特徴とする請求項１～４のいずれか１項に記載の画像投影システム。
【請求項6】
前記画像投影装置の画像処理部は、
各前記端末装置の所定表示領域にある画像の画像データ毎に異なる階層レベルを割り当て、前記画像データの合成を、階層レベル順に画像データを重畳合成することによって行う
ことを特徴とする請求項１～５のいずれか１項に記載の画像投影システム。
【請求項7】
前記画像投影装置の前記画像取得部は、各前記端末装置の所定表示領域にある画像の画像データうち、前記画像投影部によって投影される画像の画像データを前記端末装置へ要求し、
前記端末装置の所定領域画像送信部は、前記画像生成部で生成した画像データに基づく画像の位置が所定表示領域にあるときに、その画像のうち前記要求された画像の画像データを前記画像投影装置へ送信する
ことを特徴とする請求項６に記載の画像投影システム。
【請求項8】
前記端末装置の前記所定領域画像送信部は、前記画像データに加え、この画像データに関連する情報である画像属性情報を前記通信経路を介して前記画像投影装置へ送信し、
前記画像投影装置の前記画像取得部は、前記通信経路を介して前記画像属性情報を取得し、
前記画像投影装置の前記画像処理部は、前記画像属性情報に基づいて、前記複数の端末装置の所定表示領域にある画像の画像データを合成する
ことを特徴とする請求項１～７のいずれか１項に記載の画像投影システム。
【請求項9】
前記画像投影装置の前記操作命令処理部は、前記取得した画像操作命令による操作対象となる画像の画像データを、前記画像取得部で取得した前記画像属性情報に基づいて判断することを特徴とする請求項８に記載の画像投影システム。
【請求項10】
複数の端末装置の所定表示領域にある画像の画像データを通信経路を介して取得し、この画像データに基づいた画像を投影する画像投影装置において、
各前記端末装置の所定表示領域にある画像の画像データを取得する画像取得部と、
前記複数の端末装置の所定表示領域にある画像の画像データを合成する画像処理部と、
前記画像処理部で合成した画像データに基づいた画像を投影する画像投影部と、
前記画像投影部で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置へ、この画像操作命令を前記通信経路を介して送信する操作命令処理部と、を備えたことを特徴とする画像投影装置。
【請求項11】
コンピュータを、
アプリケーションプログラムによりデータファイルに基づいて生成される画像の位置が所定表示領域にあるときに、その画像の一部又は全部の画像データを画像投影装置へ前記通信経路を介して送信する手段、
前記画像投影装置で投影されている画像を操作するための手段、
前記操作手段が所定操作されたときに、その操作に応じた画像操作命令を前記画像投影装置へ前記通信経路を介して送信する手段、
前記画像投影装置から前記画像操作命令を前記通信経路を介して受信したとき、この画像操作命令に応じた前記データファイルの編集を前記アプリケーションプログラムに実行させる手段、として機能させることを特徴とするプログラム。

【発明の詳細な説明】
【技術分野】
【0001】

本発明は、画像投影システムと、これに用いられる画像投影装置及びプログラムに関するものであり、特に、複数人による共同作業や情報の共有を効率的に行うことのできる画像投影システムに関する。

【背景技術】

【0002】

従来より、画像投影装置として、例えば、コンピュータ装置等から画像情報を入力して液晶表示素子に当該画像を表示し、この液晶表示素子に光を照射して投影スクリーン上に拡大投影するプロジェクタなどが広く使用されている。

【0003】

この種のプロジェクタは、複数人が参加して行われる会議等において多く使用されており、かかるプロジェクタを用いることにより、拡大投影された一つの画像を複数の参加者が同時に見ながら議論を進めていくことができる。

【0004】

また、一方で、複数の端末装置をネットワークなどの通信経路で接続することにより、会議等における情報の共有や共同作業を効率的に行うことが多くなされている。例えば、特許文献１には、図３３に示すように、サーバと複数の端末装置とにより構成される会議支援システムにおいて、サーバ５１０が、複数の端末装置５２０ａ～５２０ｃから送信された各画像データ５３０ａ～５３０ｃを合成し、当該合成した画像データ５４０を前記複数の端末装置５２０ａ～５２０ｃに送信して、当該画像データ５４０に基づく画像を各端末装置５２０ａ～５２０ｃの画面に表示させることにより、各参加者が同一の画像を見ながら議論を行うことができる会議支援システム５００が開示されている。

【特許文献1】特開２００６－３１３５９号公報

【発明の開示】

【発明が解決しようとする課題】

【0005】

特許文献１のような会議支援システムを構成する端末装置又はサーバにプロジェクタを接続することによって、拡大投影された一つの画像を複数の参加者が同時に見ながら、かつ、必要に応じて各参加者が自分の端末装置の画像の編集を行いながら議論を進めていくことが可能となる。

【0006】

しかしながら、特許文献１に記載の発明は、サーバが、複数の端末装置の夫々に合成した画像情報を送信するため、ネットワークなどの通信経路を介してサーバと接続する端末装置の数が増えた場合、送信する画像情報の情報量が端末装置の数に比例して増加し、通信経路に大きな負荷がかかることとなり、会議等における情報の共有を円滑に行うことができなかった。

【0007】

さらに、特許文献１に記載の発明では、各端末装置が保有する画像の編集は、その画像を生成する端末装置の操作部を操作して行わなければならないため、複数の参加者により行われる共同作業を円滑に行うことはできなかった。

【0008】

そこで、本発明は、ネットワークにかかる負荷を軽減し、画像の編集をその画像を生成する端末装置以外でも可能とすることにより、複数人による情報の共有や共同作業を円滑に行うことのできる画像投影システムと、これに用いられる画像投影装置及びプログラムを提供することを目的とするものである。

【課題を解決するための手段】

【0009】

上記課題を解決するために、請求項１に記載の発明は、複数の端末装置と、これら複数の端末装置から通信経路を介して画像データを取得し、この画像データに基づいた画像を投影する画像投影装置とを備えた画像投影システムにおいて、前記画像投影装置は、各前記端末装置の所定表示領域にある画像の画像データを前記通信経路を介して取得する画像

取得部と、前記複数の端末装置の所定表示領域にある画像の画像データを合成する画像処理部と、前記画像処理部で合成した画像データに基づいた画像を投影する画像投影部と、前記画像投影部で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置へ、この画像操作命令を前記通信経路を介して送信する操作命令処理部と、を備え、前記端末装置は、データファイルを記憶する記憶部と、前記データファイルに基づいた画像データを生成する画像生成部と、前記画像生成部で生成した画像データに基づく画像の位置が所定表示領域にあるときに、その画像の一部又は全部の画像データを前記通信経路を介して前記画像投影装置へ送信する所定領域画像送信部と、前記画像投影装置から前記画像操作命令を前記通信経路を介して受信したとき、この画像操作命令に応じて前記データファイルを編集する編集部と、を備えたことを特徴とする。

【0010】

また、請求項２に記載の発明は、請求項１に記載の発明において、前記端末装置は、前記画像生成部で生成した画像データに基づく画像を表示可能な表示部と、前記所定表示領域として、前記表示部の表示領域に隣接した仮想表示領域を設定する仮想表示領域設定部と、を備える
ことを特徴とする。

【0011】

また、請求項３に記載の発明は、請求項１又は請求項２に記載の発明において、前記端末装置は、前記画像投影装置で投影されている前記端末装置の所定表示領域にある画像を操作するための操作部と、前記操作部が所定操作されたときに、その操作に応じた画像操作命令を前記画像投影装置へ前記通信経路を介して送信する操作命令送信部と、を備えたことを特徴とする。

【0012】

また、請求項４に記載の発明は、請求項３に記載の発明において、前記端末装置は、前記画像投影装置で投影されている画像を指示するための指示部を備え、前記操作命令送信部は、前記指示部が所定操作されたときに、その操作に応じた画像指示命令を前記通信経路を介して前記画像投影装置へ送信し、前記画像投影装置の画像処理部は、前記端末装置から画像指示命令を受信したとき、この画像指示命令に基づいた位置にポインタ画像を、前記複数の端末装置の所定表示領域にある画像の画像データと共に合成することを特徴とする。

【0013】

また、請求項５に記載の発明は、請求項１～４の何れか１項に記載の発明において、前記端末装置の制御部は、前記画像生成部によって前記編集後のデータファイルに基づいて前記所定表示領域にある画像データが生成される毎に、前記所定表示領域にある画像の画像データを前記通信経路を介して前記画像投影装置へ送信することを特徴とする。

【0014】

また、請求項６に記載の発明は、請求項１～５のいずれか１項に記載の発明において、前記画像投影装置の画像処理部は、各前記端末装置の所定表示領域にある画像の画像データ毎に異なる階層レベルを割り当て、前記画像データの合成を、階層レベル順に画像データを重畳合成することによって行うことを特徴とする。

【0015】

また、請求項７に記載の発明は、請求項６に記載の発明において、前記画像投影装置の前記画像取得部は、各前記端末装置の所定表示領域にある画像の画像データうち、前記画像投影部によって投影される画像の画像データを前記端末装置へ要求し、前記端末装置の所定領域画像送信部は、前記画像生成部で生成した画像データに基づく画像の位置が所定表示領域にあるときに、その画像のうち前記要求された画像の画像データを前記画像投影装置へ送信することを特徴とする。

【0016】

また、請求項８に記載の発明は、請求項１～７のいずれか１項に記載の発明において、

前記端末装置の前記所定領域画像送信部は、前記画像データに加え、この画像データに関連する情報である画像属性情報を前記通信経路を介して前記画像投影装置へ送信し、前記画像投影装置の前記画像取得部は、前記通信経路を介して前記画像属性情報を取得し、前記画像投影装置の前記画像処理部は、前記画像属性情報に基づいて、前記複数の端末装置の所定表示領域にある画像の画像データを合成することを特徴とする。

【0017】

また、請求項９に記載の発明は、請求項８に記載の発明において、前記画像投影装置の前記操作命令処理部は、前記取得した画像操作命令による操作対象となる画像の画像データを、前記画像取得部で取得した前記画像属性情報に基づいて判断することを特徴とする。

【0018】

また、請求項１０に記載の発明は、複数の端末装置の所定表示領域にある画像の画像データを通信経路を介して取得し、この画像データに基づいた画像を投影する画像投影装置において、各前記端末装置の所定表示領域にある画像の画像データを取得する画像取得部と、前記複数の端末装置の所定表示領域にある画像の画像データを合成する画像処理部と、前記画像処理部で合成した画像データに基づいた画像を投影する画像投影部と、前記画像投影部で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置へ、この画像操作命令を前記通信経路を介して送信する操作命令処理部と、を備えたことを特徴とする画像投影装置とした。

【0019】

また、請求項１１に記載の発明は、アプリケーションプログラムによりデータファイルに基づいて生成される画像の位置が所定表示領域にあるときに、その画像の一部又は全部の画像データを画像投影装置へ前記通信経路を介して送信する手段、前記画像投影装置で投影されている画像を操作するための手段、前記操作手段が所定操作されたときに、その操作に応じた画像操作命令を前記画像投影装置へ前記通信経路を介して送信する手段、前記画像投影装置から前記画像操作命令を前記通信経路を介して受信したとき、この画像操作命令に応じた前記データファイルの編集を前記アプリケーションプログラムに実行させる手段、として機能させることを特徴とするプログラムとした。

【発明の効果】

【0020】

請求項１、１０、１１に記載の発明によれば、画像投影装置の画像処理部により合成した画像データに基づく画像を、画像投影装置の画像投影部によりスクリーン等の大画面上に投影することにより、各端末装置に合成した画像の画像データを送信する必要がないため、通信経路にかかる負荷を軽減することができ、その結果、多くの端末装置が画像投影装置と接続した場合であっても、複数人による情報の共有を円滑に行うことができる。

【0021】

さらに、画像投影装置は、画像投影部で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置へ、この画像操作命令を送信し、この画像操作命令に応じて端末装置がデータファイルを編集することとしたため、画像の編集をその画像を生成する端末装置以外の装置からでも可能になり、複数人による共同作業を円滑に行うことができる。

【0022】

請求項２に記載の発明によれば、端末装置に、表示部の表示領域とは別個に所定表示領域としての仮想表示領域を設けることにより、複数人による情報の共有や共同作業を円滑に行うことができる。例えば、端末装置の利用者は、所定表示領域と所定表示領域以外の領域とを明確に区別することができるため、意図しない画像が投影表示されることを防止することができる。また、表示部の表示領域の画像は画像投影装置で投影表示されないので、この表示部の表示領域を端末装置の利用者だけの作業スペースとして利用することが

できる。

【0023】

請求項３に記載の発明によれば、他の端末装置の所定表示領域にある画像を操作することができ、さらに、当該画像の操作は、操作対象の画像の画像データを送信した端末装置へ画像操作命令を送信することによって行われるため、端末装置の利用者は、その端末装置を操作することにより、他の端末装置の画像を操作することができ、その結果、複数人により行われる共同作業を円滑に行うことができる。

【0024】

請求項４に記載の発明によれば、端末装置の使用者は、画像投影装置によって投影されている領域のうち、自分がどこを指示しているのかを把握することができ、複数人による共同作業を容易に行うことが可能となる。

【0025】

請求項５に記載の発明によれば、画像投影装置で投影されている画像をリアルタイムで更新することができるため、複数人による情報の共有や共同作業を円滑に行うことが可能となる。

【0026】

請求項６に記載の発明によれば、画像投影装置の画像処理部は、各端末装置の所定表示領域にある画像の画像データを階層レベル順に重畳合成するので、画像投影装置を高解像度化又は高画角化しなくても、その投影表示された画像が見にくくならず、その結果、複数人による情報の共有や共同作業を円滑に行うことが可能となる。

【0027】

請求項７に記載の発明によれば、端末装置の所定領域画像送信部は、所定表示領域にある画像の画像データのうち、画像投影装置の画像処理部により複数の画像データと合成された際に、画像投影部によって投影されない部分の画像の画像データを画像投影装置に送信しないため、画像投影装置に余分な画像データが送信されず、送信される画像データのデータサイズを小さくすることができ、その結果、通信経路にかかる負担を軽減させることができる。

【0028】

請求項８に記載の発明によれば、画像投影装置は、画像属性情報に基づいて画像データの合成を行うことが可能となるため、例えば、画像属性情報を画像の位置及びサイズの情報とすることにより、その情報に基づいて各画像データに配置して投影表示することができる。

【0029】

請求項９に記載の発明によれば、取得した画像操作命令による操作対象となる画像の画像データを、画像属性情報に基づいて判断することとしたため、操作対象の画像の画像データを判断するための情報をその操作毎に各端末装置に対して別途要求する必要がなく、通信経路にかかる負担を軽減させることができる。

【発明を実施するための最良の形態】

【0030】

［１．画像投影システムの概要］

以下に、本発明の実施の形態における画像投影システムについて、図面を参照しながら説明する。図１は本実施形態における画像投影システムの全体的なシステム構成を示す図であり、図２は本実施形態における画像投影システムに用いられる画像投影装置の概略構成図であり、図３は本実施形態における画像投影システムに用いられる端末装置の概略構成図である。

【0031】

本実施形態にかかる画像投影システムＳは、図１に示すように、画像投影装置１と、この画像投影装置１と通信経路３を介して接続された複数の端末装置（ここでは端末装置２ａ，２ｂ）とにより構成されるものであり、複数の端末装置２ａ，２ｂで実行されるアプリケーションプログラム（以下、単に「アプリケーション」と呼ぶこともある。）によっ

て生成される画像のうち、各端末装置２ａ，２ｂの所定表示領域にある画像の画像データを一つの画像データとして合成するとともに、合成した画像データに基づく画像をスクリーン等の大画面上に投影するシステムである。また、この画像投影システムＳは、任意の端末装置又はリモコン装置（図示せず）から画像投影装置１を介して他の端末装置へ、画像投影装置で投影している画像のうちの所定画像を操作するための画像操作命令を送信することにより、この画像操作命令に基づき、大画面上に投影されている画像のうち、自分の端末装置で実行されているアプリケーションによって生成される画像だけでなく、他の端末装置で実行されているアプリケーションによって生成される画像も編集可能としている。

【0032】

なお、本実施形態においては、画像投影装置１に２台の端末装置が接続されている場合について説明するが、画像投影装置１に接続される端末装置の数はこれに限ったものではない。また、以下において、端末装置２ａ，２ｂの任意の一つを表す場合には端末装置２と表現することがある。

【0033】

本実施形態にかかる画像投影システムＳにおいて、画像投影装置１は、図２に示すように、画像取得部１０と、画像処理部１１と、画像投影部１２と、操作命令処理部１３と、記憶部１４とを備えている。また、端末装置２は、図３に示すように、記憶部２０と、画像生成部２１と、所定領域画像送信部２２と、編集部２３と、表示部２４と、仮想表示領域設定部２５と、操作部２６と、操作命令送信部２７と、指示部２８とを備えている。

【0034】

本実施形態にかかる画像投影システムＳの全体的な動作は、主に、画像投影装置１と端末装置２との接続を行うための接続動作、各端末装置２から取得した複数の画像データを合成し、この合成した画像データを投影するための投影動作、端末装置２からの要求に応じて任意のデータファイルを編集するための編集動作の順に行われる。以下に、本実施形態にかかる画像投影システムＳの全体的な動作の流れの一例を、図４～６を参照して概略的に説明する。

【0035】

先ず、接続動作について、図４を用いて説明する。図４は、本実施形態の画像投影システムＳにおける接続動作の一例を示すシーケンス図である。なお、この動作は、端末装置２ａ及び端末装置２ｂにおいてそれぞれ行われるものである。

【0036】

図４に示すように、先ず、端末装置２の使用者が、操作部２６を用いて端末装置２に対して起動操作を行うと（ステップＳ０１）、端末装置２は、操作命令送信部２７より画像投影装置１に対して接続要求信号を送信する（ステップＳ０２）。次に、画像投影装置１は、接続要求信号を受信すると、複数の端末装置２から取得する画像データの解像度を統一させるため、画像取得部１０より端末装置２に対して画像投影装置１で設定されている解像度の情報を送信する（ステップＳ０３）。

【0037】

次に、端末装置２は、受信した解像度の情報に基づき、所定表示領域として仮想表示領域を作成する（ステップＳ０４）。この仮想表示領域は、図１に示すように、端末装置２ａ，２ｂでは、それぞれの表示部２４の表示領域４０ａ，４０ｂに隣接した仮想的な表示領域４５ａ，４５ｂであり、仮想表示領域設定部２５により設定されるものである。以下、表示領域４０ａ，４０ｂの任意の一つを現す場合には表示領域４０と表現し、仮想表示領域４５ａ，４５ｂの任意の一つを表す場合には仮想表示領域４５と表現することがある。

【0038】

なお、本実施形態では、上記のように仮想表示領域４５を所定表示領域として設定しているが、この所定表示領域は、例えば、端末装置２に設けられた表示部２４の表示領域の一部に設けてもよい。

【0039】
ステップＳ０４において仮想表示領域４５を作成すると、端末装置２は、操作命令送信部２７より画像投影装置１に対して起動作業が完了したことを通知する（ステップＳ０５）。そして、当該通知を受信した画像投影装置１が、操作命令処理部１３より端末装置２に対して接続が完了したことを通知することにより（ステップＳ０６）、画像投影装置１と端末装置２との接続処理が完了する。
【0040】
次に、投影動作について、図５を用いて説明する。図５は本実施形態の画像投影システムＳにおける投影動作の一例を示すシーケンス図である。
【0041】
図５に示すように、使用者Ａにより端末装置２ａの有するアプリケーションプログラムの実行操作が行われると（ステップＳ０７）、端末装置２ａは、操作対象となったアプリケーションプログラムを実行し、このアプリケーションのデータファイルに応じた画像データを生成する（ステップＳ０８）。なお、アプリケーションプログラムの実行操作は、使用者Ａが操作部２６を用いて行うものである。
【0042】
ここで、データファイルとは、端末装置２の有する表計算ソフトウエア、図形作成ソフトウエア等の各種アプリケーションにより実行されるアプリケーションの保存データファイルであり、各端末装置２の有する記憶部２０に記憶されている。
【0043】
また、このアプリケーションプログラムは、端末装置２において、画像生成部２１及び編集部２３として機能するものである。すなわち、アプリケーションプログラムは、端末装置２の使用者が操作部２６を用いてデータファイルの実行操作を行うと、画像生成部２１として、記憶部２０に記憶されたデータファイルに基づく画像（例えば、図１において、端末装置２ａにより生成された画像３０ａ～３０ｄ、端末装置２ｂにより生成された画像３０ｅ～３０ｇ）のデータを生成する。さらに、端末装置２の使用者が操作部２６や指示部２８を用いて、画像生成部２１により生成した画像データに対して所定の操作を行う等により、アプリケーションプログラムは、編集部２３として、当該操作に基づいてデータファイルの編集を行う。
【0044】
このように、端末装置２ａは、画像生成部２１によりデータファイルに基づく画像データが生成されると、次に、生成した画像データに基づく画像を表示部２４により表示する（ステップＳ０９）。
【0045】
また、端末装置２ｂにおいても、上記ステップＳ０７～Ｓ０９までの処理が行われる。ここで、図５においてステップＳ１０～Ｓ１２までの処理は、ステップＳ０７～Ｓ０９までの処理と同様であるため、その説明は省略する。
【0046】
次に、使用者Ａの操作により、端末装置２ａで実行されているアプリケーションによって生成される画像を仮想表示領域４５ａに位置させると（ステップＳ１３）、端末装置２ａは、仮想表示領域４５ａにある画像を検出し（ステップＳ１４）、当該検出結果に基づき画像属性情報を更新する（ステップＳ１５）。この画像属性情報とは、仮想表示領域４５にある画像に関する情報であり、仮想表示領域４５にある各画像を識別するための識別情報（ウィンドウＩＤ）の他、当該画像の位置やサイズ等の情報であり、詳しくは後述する。
【0047】
なお、使用者による、表示部２４の表示領域４０に表示された画像を仮想表示領域４５に位置させる操作としては、後述する操作部２６を用いて当該画像を仮想表示領域４５に移動させる他、表示領域４０に表示される画像の所定位置（例えば、キャプションバー）に所定のボタンを設け、使用者が操作部２６を用いてこのボタンを押下することにより、

当該画像が仮想表示領域４５に移動するようにしてもよい。

【0048】

画像属性情報が更新されると、端末装置２ａは、画像投影装置１に対して更新された画像属性情報を送信する（ステップＳ１６）。ここで、ステップＳ１４～Ｓ１６までの処理は、所定領域画像送信部２２により行われるものである。

【0049】

また、端末装置２ｂにおいても、上記ステップＳ１３～Ｓ１６までの処理が行われる。ここで、図５においてステップＳ１７～Ｓ２０までの処理は、ステップＳ１３～Ｓ１６までの処理と同様であるため、その説明は省略する。

【0050】

次に、画像投影装置１は、各端末装置２から画像属性情報を受信すると、画像属性情報管理テーブルの情報を更新する（ステップＳ２１）。画像属性情報管理テーブルとは、複数の端末装置２から取得した複数の画像データに関する画像属性情報を管理するためのテーブルであり、画像投影装置１に設けられた記憶部１４の所定の領域に記憶される。ここで、この画像属性情報の受信、及び画像属性情報管理テーブルの更新は、画像取得部１０により行われるものである。

【0051】

次に、画像投影装置１は、画像属性情報管理テーブルの情報に基づいて端末装置２ａ，２ｂに対して画像データ要求情報を送信する（ステップＳ２２、Ｓ２３）。この画像データ要求情報とは、仮想表示領域４５にある画像の画像データのうち、画像投影装置１の画像投影部１２によって投影される画像の画像データを端末装置２に要求するものである。すなわち、仮想表示領域４５ｂにある画像が画像投影装置１の画像処理部１１によって他の画像と重畳合成された際に、他の画像に隠れない部分（画像として視認できる部分）の画像の画像データのみを送信するよう指示するものである。画像投影装置１は、この画像データ要求情報を画像取得部１０より送信する。

【0052】

そして、各端末装置２ａ，２ｂは、この画像データ要求情報に基づいて、仮想表示領域４５ａ，４５ｂにある画像の一部又は全部の画像データを通信経路３を介して画像投影装置１に送信する（ステップＳ２４、Ｓ２５）。かかる画像データの送信は、所定領域画像送信部２２により行われるものである。

【0053】

最後に、画像データを受信した画像投影装置１は、各端末装置２ａ，２ｂから取得した画像データを画像属性情報管理テーブルの情報に基づいて合成し、さらに、この合成した画像データに基づいた画像（以下、「合成画像」と称することもある）を画像投影部１２により投影する（ステップＳ２６）。ここで、各端末装置２ａ，２ｂから取得した画像データの合成は、画像処理部１１により行われるものである。

【0054】

すなわち、例えば、図１に示すように、端末装置２ａの仮想表示領域４５ａに画像３０ｃ、画像３０ｄが位置しており、端末装置２ｂの仮想表示領域４５ｂに画像３０ｆ、画像３０ｇが位置している場合、画像投影装置１は、画像取得部１０により、端末装置２ａから取得した画像３０ｃ，画像３０ｄの画像データと端末装置２ｂから取得した画像３０ｆ，画像３０ｇの画像データとを取得し、さらに、画像処理部１１によりこれらの画像データを合成し、合成した画像データに基づく合成画像５０を画像投影部１２により投影する。なお、画像３０ｃは、仮想表示領域４５ａ及びこの仮想表示領域４５ａ以外の領域４０ａの両方の領域に亘って位置しているが、この場合、画像投影装置１は、画像３０ｃのうち、仮想表示領域４５ａに位置している部分の画像の画像データのみを取得する。

【0055】

このように、画像投影装置の画像処理部により合成した画像データに基づく画像を、画像投影装置の画像投影部によりスクリーン等の大画面上に投影することにより、各端末装置に合成した画像の画像データを送信する必要がないため、通信経路にかかる負荷を軽減

することができ、その結果、多くの端末装置が画像投影装置と接続した場合であっても、上記複数人による情報の共有を円滑に行うことができる。

【0056】

また、本実施形態にかかる端末装置２では、仮想表示領域４５にある画像の画像データの全てを送信するのではなく、画像投影装置１の画像処理部１１によって、他の端末装置２の画像データと合成されたときに、当該他の画像データによって隠れる部分の画像データは送信しないようにしている。すなわち、例えば、図１に示すように、端末装置２ａの有する画像３０ｃ，３０ｄの画像データと端末装置２ｂ有する画像３０ｆ、３０ｇの画像データとを合成することにより生成された合成画像５０が投影領域６０に投影されている場合、画像３０ｄは画像３０ｆ及び画像３０ｇにより隠れて投影されていない部分があるため、端末装置２ｂの所定領域画像送信部２２は、画像３０ｄの画像データのうち、合成することより画像３０ｆ、画像３０ｇにより隠れることとなる部分の画像の画像データは送信せず、画像投影装置１の投影領域６０に投影されることとなる部分の画像の画像データのみを画像投影装置１に送信することとしている。

【0057】

このように、端末装置２の所定領域画像送信部２２は、仮想表示領域４５にある画像の画像データのうち、画像投影装置１の画像処理部１１により複数の画像データと合成された際に、画像投影部１２によって投影されない部分の画像の画像データを画像投影装置１に送信しないため、画像投影装置１に余分な画像データが送信されず、送信される画像データのデータサイズを小さくすることができ、その結果、通信経路３にかかる負担を軽減させることができる。

【0058】

また、上記のように、本実施形態における画像投影システムＳでは、端末装置２の所定領域画像送信部２２は、画像データに関連する情報である画像属性情報を通信経路３を介して画像投影装置１へ送信し、画像投影装置１の画像取得部１０は、通信経路３を介して画像属性情報を取得し、画像投影装置１の画像処理部１１は、画像属性情報に基づいて、複数の端末装置２の仮想表示領域４５にある画像の画像データを合成することとしている。かかる構成とすることにより、画像投影装置１は、画像属性情報に基づいて画像データの合成を行うことが可能となるため、例えば、画像属性情報を画像の位置及びサイズの情報とすることにより、その情報に基づいて各画像データに配置して投影表示することができる。

【0059】

なお、本実施形態において、端末装置２の制御部は、画像生成部によって編集後のデータファイルに基づいて仮想表示領域４５にある画像データが生成される毎に、仮想表示領域４５にある画像の画像データを画像投影装置１へ送信することとしている。

【0060】

すなわち、図５に示すように、ステップＳ１５において画像属性情報の更新がなされる毎に、更新された画像属性情報を画像投影装置１に送信することで、端末装置２の使用者が所定の操作を行ってから、ステップＳ２４において画像データを画像投影装置１に送信するまでの処理をスムーズに行うことできる。換言すれば、画像投影装置１で投影されている画像をリアルタイムで更新することができるため、複数人による情報の共有や共同作業を円滑に行うことが可能となる。

【0061】

また、本実施形態では、端末装置２に、表示部２４の表示領域４０とは別個に所定表示領域としての仮想表示領域４５を設けることにより、複数人による情報の共有や共同作業を円滑に行うことができる。例えば、端末装置２の利用者は、所定表示領域と所定表示領域以外の領域とを明確に区別することができるため、意図しない画像が投影表示されることを防止することができる。また、表示部２４の表示領域４０の画像は画像投影装置１で投影表示されないので、この表示部２４の表示領域４０を端末装置２の利用者だけの作業スペースとして利用することができる。

【0062】
ところで、本実施形態にかかる画像投影システムＳでは、端末装置２からの要求に応じて任意のデータファイルを編集することを可能としている。すなわち、本実施形態において、画像投影装置１は、画像投影部１２で投影している画像のうちの任意の画像を操作するための画像操作命令を他の端末装置などから取得したとき、操作命令処理部１３により、この画像操作命令による操作対象となる画像の画像データを送信した端末装置２へ、この画像送信情報を送信し、端末装置２は、画像操作命令を受信したとき、編集部２３によりこの画像操作命令に応じてデータファイルを編集することとしている。
【0063】
以下、この編集動作について、図６を用いてさらに詳細に説明する。図６は、本実施形態の画像投影システムＳにおける編集動作の一例を示すシーケンス図である。
【0064】
図６に示すように、端末装置２ａの使用者Ａにより、画像投影装置１で投影されている画像５０のうち、端末装置２ｂの仮想表示領域４５ｂにある画像に対して所定の操作入力（例えば、画像の移動）が行われると（ステップＳ２７）、端末装置２ａは、当該操作に基づく画像操作命令を取得する（ステップＳ２８）。ここで、画像投影装置１で投影されている、端末装置２の仮想表示領域４５にある画像の操作は、使用者が操作部２６や指示部２８を用いて行うものである。
【0065】
次に、端末装置２ａは、使用者Ａによる当該操作が端末装置２ａで実行されるのを防ぐため、当該画像操作入力を破棄し（ステップＳ２９）、画像操作命令を通信経路３を介して画像投影装置１に送信する（ステップＳ３０）。ここで、画像操作入力の破棄、及び画像操作命令の送信は、端末装置２の操作命令送信部２７により行われるものである。
【0066】
次に、端末装置２ａから画像操作命令を受信すると、画像投影装置１は操作命令処理部１３により、この画像操作命令を、送信すべき端末装置２毎に当該画像操作命令を振り分ける処理を行う（ステップＳ３１）。ここでは、この画像操作命令は、端末装置２ｂに送信されるように振り分けられる。
【0067】
また、画像投影装置１は、受信した画像操作命令、及び画像取得部１０で取得した画像属性情報に基づいて、各端末装置２の仮想表示領域４５にある各画像に割り当てられている階層レベルを更新する（ステップＳ３２）。すなわち、画像投影装置１は、画像操作命令及び画像属性情報により、どの画像が操作されたのかを判定し、画像属性情報管理テーブルに管理されている当該画像の階層レベルを最上層に設定するとともに、他の画像の階層レベルを順次繰り下げる処理を行う。ここで、この階層レベルの更新は、画像処理部１１により行われるものである。
【0068】
このように、本実施形態においては、画像投影装置１の画像処理部１１は、各端末装置２の仮想表示領域４５にある画像の画像データ毎に異なる階層レベルを割り当て、画像データの合成を、階層レベル順に画像データを重畳合成することによって行うこととしている。
【0069】
すなわち、図１に示すように、画像投影装置１の画像処理部１１は、各端末装置２の仮想表示領域４５にある画像３０ｃ、３０ｄ、３０ｆ、３０ｇにそれぞれ階層レベルを割り当て、下層から、画像３０ｃ→画像３０ｄ→画像３０ｇ→画像３０ｆの順に重畳合成し、当該合成した画像データに基づいた画像（合成画像５０）を投影する。
【0070】
かかる構成とすることにより、画像投影装置１の画像処理部１１は、各端末装置２の仮想表示領域４５にある画像の画像データを階層レベル順に重畳合成するので、画像投影装置１を高解像度化又は高画角化しなくても、その投影表示された画像が見にくくならず、

その結果、複数人による情報の共有や共同作業を円滑に行うことが可能となる。

【0071】

そして、画像投影装置１は操作命令処理部１３により、ステップＳ３０で端末装置２ａから受信した画像操作命令を通信経路３を介して端末装置２ｂに送信し（ステップＳ３３）、当該画像操作命令を受信した端末装置２ｂは、この画像操作命令に基づく操作入力を再生して（ステップＳ３４）、この再生した操作入力に応じて、アプリケーションは編集部として実行中のデータファイルの編集を行う（ステップＳ３５）。

【0072】

このように、本実施形態にかかる画像投影システムＳでは、画像投影装置１は、画像投影部１２で投影している画像のうちの所定画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置２へ、この画像操作命令を通信経路３を介して送信し、端末装置２は、画像投影装置１から画像操作命令を通信経路３を介して受信したとき、この画像操作命令に応じてデータファイルを編集することとしたため、自分の端末装置２が有する画像のみならず、他の端末装置２から送信された画像の編集を行うことができ、複数人による共同作業を円滑に行うことができる。

【0073】

なお、本実施形態にかかる画像投影システムＳにおいて、端末装置２は、画像投影装置１で投影されている画像を指示するための指示部２８を備え、操作命令送信部２７は、指示部２８が所定操作されたときに、その操作に応じた画像指示命令を画像投影装置１へ送信し、画像投影装置１の画像処理部１１は、端末装置２から画像指示命令を受信したとき、この画像指示命令に基づいた位置にポインタ画像を、複数の端末装置２の仮想表示領域４５にある画像の画像データと共に合成することとしている。

【0074】

すなわち、例えば、図１に示すように、画像投影装置１で投影されている画像として、各端末装置２から取得した画像データに基づく合成画像５０の他、画像指示命令に基づくポインタ画像Ｐ１，Ｐ２を投影する。

【0075】

かかる構成とすることにより、端末装置２の使用者が、画像投影装置１によって投影されている領域のうちどこを指示しているのかを把握させることができる。

【0076】

［２．画像投影システムの具体的構成］

（画像投影装置１の構成について）

次に、画像投影装置１の構成について説明する。図７は本実施形態における画像投影装置１の構成図であり、図８は本実施形態における画像投影装置１に記憶される画像属性情報管理テーブルの一例を示す図であり、図９は本実施形態における画像投影装置１の投影領域６０に規定された座標を説明するための図であり、図１０は本実施形態における画像投影装置１に記憶される接続情報管理テーブルの一例であり、図１１は本実施形態における画像投影装置１に記憶されるポインタ情報管理テーブルの一例であり、図１２は本実施形態における画像投影装置１の画像処理の一例を示す図である。

【0077】

画像投影装置１は、図７に示すように、各種操作を行うための操作パネル１０１と、設定情報やデータファイルなどを保持するための不揮発性メモリである記憶部１０２と、端末装置２と通信するためのインターフェイス１０４と、外部から映像信号を入力する映像信号入力回路１０５と、映像信号入力回路１０５を介して入力される映像信号やインターフェイス１０４を介して取得した画像データに所定の処理を施す画像処理回路１０６と、この画像処理回路１０６から出力される画像信号に基づいた画像を投影する画像投影部１０７と、画像投影装置１全体を制御する制御部１０８とを備えており、これらはハウジングに内蔵される。

【0078】

操作パネル１０１は、画像投影装置１において使用者が操作パネル１０１を操作することによって、その操作内容に応じた制御を制御部１０８が実行する。

【0079】

記憶部１０２は、フラッシュメモリ（flash memory）などから構成され、画像投影装置１に設定されている解像度の情報、ポインタ画像の画像データ、各端末装置２の仮想表示領域４５にある画像の画像データを記憶する他、当該画像の位置情報、サイズ情報等を管理する画像属性情報管理テーブルを記憶する画像属性情報記憶領域１１０、画像投影装置１に接続している端末装置２の接続状況を管理する接続情報管理テーブルを記憶する接続情報記憶領域１１１、ポインタの位置情報等を記憶するポインタ情報管理テーブルを記憶するポインタ情報記憶領域１１２を有する。

【0080】

インターフェイス１０４は、外部装置との通信を行うことができるＵＳＢインターフェイスであり、端末装置２から画像データや画像操作命令等を取得したり、外部のコンピュータ装置と通信したりするときに制御部１０８によって用いられる。なお、インターフェイス１０４としてＵＳＢインターフェイスに代えて、無線或いは有線のＬＡＮインターフェイスなどを用いるようにしてもよい。

【0081】

映像信号入力回路１０５は、コンポジット映像信号（例えばＮＴＳＣ映像信号）やコンポーネント映像信号（例えばＲＧＢ信号）などの映像信号を入力する。

【0082】

画像処理回路１０６は、制御部１０８による制御に基づいて、映像信号入力回路１０５に入力された映像信号或いはインターフェイス１０４を介して取得した画像データに対して、複数の画像データの合成等の加工を行う。このように加工されて生成された画像信号は、画像投影部１０７に入力される。

【0083】

画像投影部１０７は、ランプ駆動回路１２０と、光源１２１と、照明光学系１２２と、透過型液晶パネル１２３（以下、「ＬＣＤ１２３」とする。）と、結像光学系１２４と、ＬＣＤ駆動回路１２５と、ピント調整回路１２６とを備えている。

【0084】

光源１２１は、ランプなどから構成され、制御部１０８によって制御されたランプ駆動回路１２０から出力される信号に基づいて、点灯駆動されて発光する。光源１２１で発光された光は、照明光学系１２２によって、照明光としてＬＣＤ１２３に照射される。

【0085】

ＬＣＤ１２３は、ＬＣＤ駆動回路１２５によって駆動され、その表示面に映像を表示する。このように表示された映像は、照明光学系１２２からの照明光によって、光としてＬＣＤ１２３から出射される。続いて、この出射光は、結像光学系１２４及びハウジングの投影用開口部（図示せず）を通って、スクリーン（投射面）に投影される。このように、ＬＣＤ１２３に表示される画像がスクリーンに投影される構成となっている。なお、ピント調整回路１２６によって、スクリーンに投影する画像のピントを調整することができる。

【0086】

制御部１０８は、ＣＰＵ(Central Processing Unit)，ＲＯＭ（Read Only Memory)，ＲＡＭ（Random Access Memory)などを内蔵しており、ＣＰＵがＲＯＭに予め格納されたプログラムを読み出して実行することによって、画像投影装置１を、端末装置２の仮想表示領域４５にある画像の画像データを取得する画像取得部、端末装置２の仮想表示領域４５にある画像の画像データを合成する画像処理部、画像投影部１０７で投影している画像のうちの任意の画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置２へ、この画像操作命令を送信する操作命令処理部等として機能させる。

【0087】

制御部１０８は画像取得部として、インターフェイス１０４を介して端末装置２から、当該端末装置２の仮想表示領域４５にある画像の画像データ或いは画像操作命令を取得する。なお、画像操作命令は、図示しないリモコン装置から取得することもできる。

【0088】

また、制御部１０８は、画像処理回路１０６と共に画像処理部として機能することにより、複数の端末装置２の仮想表示領域４５にある画像の画像データを合成する。この画像処理部による画像データの合成は、記憶部１０２に記憶された画像属性情報管理テーブル、及び接続情報管理テーブルに基づいて実行される。

【0089】

ここで、画像属性情報管理テーブルについて、図８を参照して説明する。

【0090】

図８に示すように、画像属性情報管理テーブルには、各端末装置２の仮想表示領域４５にある画像を送信した端末装置２（オーナーＰＣ）の名称、当該画像を表示すべき位置及びサイズに関する情報、画像データのファイル名に関する情報、及び画像処理部により複数の画像データを合成する際に、各画像データを重ね合わせる順番（階層レベル）に関する情報が、当該画像を識別するための情報（ウィンドウＩＤ）と関連付けて記憶されている。

【0091】

各端末装置２の仮想表示領域４５にある画像の位置及びサイズに関する情報は、画像投影装置１で投影される投影領域６０に規定されている座標により表される。すなわち、本実施形態における画像投影装置１は、図９に示すように、投影領域６０の縦方向をＸ方向、横方向をＹ方向とし、その左上部の頂点を原点として規定している。そして、画像の位置情報は、仮想表示領域４５にある各画像の左上部の頂点の座標の情報であり、画像のサイズ情報は、当該画像の幅（Ｗ）及び高さ（Ｈ）を座標の数値で表した情報であって、この位置情報とサイズ情報とにより、仮想表示領域４５にある画像を画像投影装置１で投影される投影領域６０のどの位置にどのサイズで投影するかを決定することができる。例えば、図９において、画像３０ｆは、その左上部の頂点が座標（４００，３０）の位置となり、画像のサイズは、幅（Ｗ）が４６０、高さ（Ｈ）が３１０となる。

【0092】

また、画像データを送信した端末装置２（オーナーＰＣ）の名称は、図１０に示す接続情報管理テーブルと関連付けられている。この接続情報管理テーブルには、図１０に示すように、画像投影装置１に接続している端末装置２の名称が、接続状況（画像投影装置１と接続中か非接続中かの別）及び各端末装置２に割り振られたＩＰアドレスと関連付けられて記憶されている。

【0093】

また、制御部１０８は、画像処理部として、端末装置２の操作命令送信部により送信された画像指示命令に基づいた位置にポインタ画像を、複数の端末装置２の仮想表示領域４５にある画像の画像データと共に合成する。ここで、このポインタ画像の合成は、ポインタ情報管理テーブルの情報に基づき実行されるものである。

【0094】

ポインタ情報管理テーブルは、図１１（ａ）に示すように、画像投影装置１に接続されている端末装置２に割り当てられるポインタ画像の画像ファイル名、及び画像投影装置１で投影される投影領域６０におけるポインタ画像の位置情報が、端末装置２の名称と関連付けられて記憶されている。なお、図１１（ｂ）は、画像投影装置１に接続している端末装置２ｃの操作部、或いは指示部が仮想表示領域４５にない場合（表示部による表示領域４０にある場合）のポインタ情報管理テーブルの一例である。

【0095】

ここで、本実施形態では、各端末装置２の仮想表示領域４５にある画像の画像データ毎に異なる階層レベルを割り当て、画像データの合成を、階層レベル順に画像データを重畳合成することによって行うこととしている。すなわち、制御部１０８は、各端末装置２の

仮想表示領域４５にある画像の画像データを合成する際、画像属性情報管理テーブルに記憶されている階層レベルの情報を参照し、この階層レベルが高い順に画像を重ね合わせて出来たような画像の画像データを生成する。

【0096】

例えば、図１２（ａ）の右図における各端末装置２ａ～２ｄの各仮想表示領域４５ａ～４５ｄにある画像３０ｃ，３０ｄ，３０ｆ～ｋが、下層から上層まで順に画像３０ｃ，３０ｄ，３０ｈ，３０ｉ，３０ｋ，３０ｊ，３０ｇ，３０ｆの階層レベルであるときには、図１２（ａ）の左図に示すように、投影領域６０にこれらの画像がこの図に示すように重ね合わされて表示される。

【0097】

なお、画像処理部による複数の画像データの合成方法としては、上述のように、投影領域６０全体に各端末装置２から取得した画像データを重ね合わせて表示させる方法の他、図１２（ｂ）に示すように、投影領域６０を端末装置２ごとに分割して表示することとしてもよい。かかる構成とすることにより、端末装置２の使用者は、画像投影装置１で投影されている画像がどの端末装置２から取得されたものであるかを容易に把握することができるため、複数人で行う共同作業等を効率よく行うことができる。

【0098】

また、制御部１０８は、インターフェイス１０４と共に操作命令処理部として機能することにより、画像投影部１０７で投影している画像のうちの任意の画像を操作するための画像操作命令を取得したとき、この画像操作命令による操作対象となる画像の画像データを送信した端末装置２へ、この画像操作命令を送信する。

【0099】

ここで、本実施形態においては、画像操作命令を端末装置２へ送信する際、この画像操作命令による操作対象となる画像の画像データ、及び当該画像操作命令を送信すべき端末装置２を、画像取得部で取得した画像属性情報に基づいて判断することとしている。

【0100】

かかる構成とすることにより、操作対象の画像の画像データを判断するための情報をその操作毎に各端末装置２に対して別途要求する必要がなく、通信経路３にかかる負担を軽減させることができる。

【0101】

（端末装置２の構成について）

次に、端末装置２の構成について説明する。図１３は、本実施形態における端末装置２の構成図である。

【0102】

本実施形態における端末装置２は、一般のパーソナルコンピュータ或いは専用端末を適用することができ、図１３に示すように、表示部であるＬＣＤ２００、ＬＣＤ２００を駆動するためのグラフィックスコントローラ２０１と、各種データ等を記憶するハードディスク装置２０２と、通信経路３を介して画像投影装置１との間で通信を行うためのインターフェイス２０３と、ＵＳＢデバイスとデータの入出力を行うためのＵＳＢバスコントローラ２０４、これに接続する接続ポートとしてのＵＳＢコネクタ２０５と、使用者の操作により所定の情報を入力可能なキーボード２０６及びマウス２０７（指示部、操作部に相当）と、端末装置２全体を制御する制御部２０８とを備えて構成され、これらの各種要素は第１のバス２０９、第２のバス２１０を介して相互に接続される。なお、図中、２１１は、第１のバス２０９と第２のバス２１０との間のデータの授受を行うためのバスコントローラである。

【0103】

ハードディスク装置２０２は、記憶部として機能するものであり、このハードディスク装置２０２には、端末装置２のオペレーティングシステム（ＯＳ）プログラム、文書作成ソフトウエア、プレゼンテーションソフトウエア、表計算ソフトウエア、図形作成ソフトウエア等の各種アプリケーションプログラムの他、このアプリケーションプログラムによ

り作製されるデータファイルが格納されている。また、上記アプリケーションプログラムとは別に、本実施形態における画像投影システムＳ用の処理プログラムとしての画像共有プログラムが格納されている。

【0104】

なお、この画像共有プログラムは、例えば、通信経路３に接続されたサーバ（図示せず）から、インターフェイス２０３を介して、制御部２０８のハードディスク装置２０２にダウンロードされるようにしてもよく、又ＣＤ－ＲＯＭ等の記録媒体に記録されてから記録媒体ドライブ（図示せず）を介して、制御部２０８のハードディスク装置２０２に読み込まれるようにしてもよい。

【0105】

インターフェイス２０３は、外部装置との通信を行うことができるＵＳＢインターフェイスであり、端末装置２から画像データや画像操作命令等を取得したり、外部のコンピュータ装置と通信したりするときに制御部２０８によって用いられる。なお、インターフェイス２０３としてＵＳＢインターフェイスに代えて、無線或いは有線のＬＡＮインターフェイスなどを用いるようにしてもよい。

【0106】

制御部２０８は、ＣＰＵ(Central Processing Unit)，ＲＯＭ（Read Only Memory)，ＲＡＭ（Random Access Memory)などを内蔵しており、ＣＰＵがハードディスク装置２０２に格納された画像共有プログラムを読み出して実行することによって、端末装置２を、所定領域画像送信部、仮想表示領域設定部、操作命令送信部として機能させる。

【0107】

また、制御部２０８は、ＣＰＵがハードディスク装置２０２に記憶した各種アプリケーションプログラムを読み出して実行することによって、画像生成部、編集部として機能させる。

【0108】

制御部２０８のＣＰＵは、ハードディスク装置２０２に記憶した各種アプリケーションプログラムを実行して画像生成部として機能し、データファイルに基づいた画像データを生成する。生成された画像データは、表示部としてのＬＣＤ２００及びグラフィックスコントローラ２０１によって、当該画像データに基づく画像としてＬＣＤ２００に表示される。

【0109】

制御部２０８は、インターフェイス２０３と共に所定領域画像送信部として機能することによって、画像生成部で生成した画像データに基づく画像の位置が仮想表示領域４５にあるときに、その画像の一部又は全部の画像データを通信経路３を介して画像投影装置１へ送信する。ここで、本実施形態における所定表示領域は、表示部の表示領域４０に隣接するように設定された仮想表示領域４５であり、この仮想表示領域４５は、制御部２０８のＣＰＵがハードディスク装置２０２に記憶された画像共有プログラムを実行して仮想表示領域設定部として機能することで設定される。

【0110】

ここで、本実施形態にかかる画像投影システムＳでは、画像生成部によって編集後のデータファイルに基づいて仮想表示領域４５にある画像データが生成される毎に、仮想表示領域４５にある画像の画像データを画像投影装置１へ送信することとしている。

【0111】

かかる構成とすることにより、画像投影装置１で投影されている画像をリアルタイムで更新することができるため、複数人による情報の共有や共同作業を円滑に行うことが可能となる。

【0112】

なお、この画像データを送信する場合は、仮想表示領域４５にある画像をキャプチャして得られるＢＭＰ（Bit Map）データをＪＰＥＧ（Joint Photographic Experts Group）データに変換する。このように、画像投影装置１に送信する画像データを圧縮することに

より、通信経路３への負荷を軽減させることができる。

【0113】

また、制御部２０８は、編集部として機能することにより、画像投影装置１から画像操作命令を通信経路３を介して受信したとき、この画像操作命令から操作入力を再生し、この操作入力に応じてデータファイルを編集する。この画像操作命令の受信は、インターフェイス２０３により行われる。

【0114】

また、制御部２０８は、インターフェイス２０３と共に操作命令送信部として機能することにより、ポインタが仮想表示領域４５に位置している場合に、キーボード２０６又はマウス２０７により所定の操作／指示が行われると、その操作／指示に応じた画像操作命令を画像投影装置１へ送信する。この際、上記操作／指示が自分の端末装置２で実行されることを防ぐために、制御部２０８は、操作入力情報、或いは指示情報を破棄した後に当該画像操作命令を画像投影装置１に送信する。なお、ここで「操作」とは、自装置又は他の端末装置のアプリケーションで実行中のデータファイルを編集するための命令であり、「指示」とは、画像投影装置１が投影している画像を指し示すポインタ画像を表示又はその移動のための命令である。

【0115】

このようにキーボード２０６やマウス２０７を操作部として用いることにより、画像投影装置１で投影されている他の端末装置２の仮想表示領域４５にある画像を操作、編集することができ、また、マウス２０７を指示部として用いることにより、さらに、端末装置２の使用者が、画像投影装置１によって投影されている領域のうちどこを指示しているのかを把握させることができる。さらに、当該画像の操作、指示は、操作対象の画像の画像データを送信した端末装置へ画像操作命令を送信することによって行われるため、通信経路３に大きな負荷をかけることなく画像の操作を行うことができる。

【0116】

（画像投影装置の具体的動作について）

次に、画像投影装置１の具体的動作の一例について、図１４～図２１を参照して説明する。図１４は、本実施形態における画像投影装置１のメイン処理フローチャートである。

【0117】

図１４に示すように、画像投影装置１の電源スイッチ（図示せず）が押下されたとき、画像投影装置１の制御部１０８は、接続処理を行う（ステップＳ１００）。この接続処理は、画像投影装置１が端末装置２と通信経路３を介して接続するための処理である。この処理は、図１５におけるステップＳ２００～Ｓ２０５までの処理であり、後述する。

【0118】

次に、制御部１０８は、端末装置２から画像属性情報を受信したか否かを判定する（ステップＳ１１０）。この処理において、端末装置２から画像属性情報を受信したと判定すると（ステップＳ１１０：Ｙｅｓ）、制御部１０８は、画像属性情報更新処理を行う（ステップＳ１２０）。この画像属性情報更新処理は、端末装置２から送信される情報に応じて画像属性情報管理テーブルの更新等を行うものである。この処理は、図１６におけるステップＳ３００～Ｓ３０８までの処理であり、後述する。

【0119】

ステップＳ１２０の画像属性情報更新処理を終了すると、制御部１０８は、表示領域算出処理を行う（ステップＳ１３０）。この表示領域算出処理は、画像投影装置１で投影される各画像の、投影領域６０における表示領域を算出するものである。この処理は、図１７におけるステップＳ４００～４０３までの処理であり、後述する。

【0120】

また、ステップＳ１１０において、端末装置２から画像属性情報を受信していないとき（ステップＳ１１０：Ｎｏ）、制御部１０８は、ポインタ情報を受信したか否かを判定する（ステップＳ１４０）。この処理において、ポインタ情報を受信したと判定すると（ステップＳ１４０：Ｙｅｓ）、制御部１０８は、ポインタ情報更新処理として、端末装置２

から送信されるポインタ情報に基づいてポインタ情報管理テーブルの更新を行う（ステップＳ１５０）。

【0121】

ステップＳ１３０、ステップＳ１５０の処理を終了すると、制御部１０８は、画像投影処理を行う（ステップＳ１６０）。この画像投影処理は、複数の端末装置２から取得した画像データ、及びポインタ画像の合成を行うものである。この処理は、図１９におけるステップＳ６００～Ｓ６１２までの処理であり、後述する。

【0122】

次に、制御部１０８は、端末装置２から画像操作命令を受信したか否かを判定する（ステップＳ１７０）。この処理において、端末装置２から画像操作命令を受信したと判定すると（ステップＳ１７０：Ｙｅｓ）、制御部１０８は、操作命令振り分け処理を行う（ステップＳ１８０）。この操作命令振り分け処理は、端末装置２から受信した画像操作命令による操作対象となる画像の画像データを送信した端末装置２へ、この画像操作命令を送信するものである。この処理は、図２０におけるステップＳ７００～Ｓ７０２までの処理であり、後述する。

【0123】

ステップＳ１８０の処理を終了したとき、或いはステップＳ１７０において、端末装置２から画像操作命令を受信していないとき（ステップＳ１７０：Ｎｏ）、制御部１０８は、電源がＯＦＦされたか否かを判定し（ステップＳ１９０）、電源がＯＦＦされていないとき（ステップＳ１９０：Ｎｏ）、処理をステップＳ１００に移行する。一方、電源がＯＦＦされたと判定すると（ステップＳ１９０：Ｙｅｓ）、制御部１０８は、メイン処理を終了する。

【0124】

次に、ステップＳ１００における接続処理について、図１５を参照して具体的に説明する。図１５は、本実施形態における画像投影装置１の接続処理フローチャートである。

【0125】

図１５に示すように、接続処理を開始すると、画像投影装置１の制御部１０８は、端末装置２から接続要求信号を受信したか否かを判定する（ステップＳ２００）。この処理において、端末装置２から接続要求信号を受信したと判定すると（ステップＳ２００：Ｙｅｓ）、当該接続要求信号を送信した端末装置２に対して、画像投影装置１の記憶部１０２に記憶されている解像度の情報を通知する（ステップＳ２０１）。これにより、各端末装置２の仮想表示領域設定部で作成される仮想表示領域４５の解像度を統一させることができ、画像投影装置１で投影される画像の見栄えを良くすることができる。

【0126】

次に、制御部１０８は、端末装置２から起動完了通知を受信したか否かを判定する（ステップＳ２０２）。この処理において、端末装置２から起動完了通知を受信したと判定すると（ステップＳ２０２：Ｙｅｓ）、制御部１０８は、接続情報管理テーブルを更新する（ステップＳ２０３）。すなわち、制御部１０８は、接続情報管理テーブルに、画像投影装置１と新たに接続した端末装置２の欄を新たに設け、当該端末装置２のＩＰアドレス及び接続状態に関する情報を当該端末装置２の名称と関連付けて記憶する。

【0127】

次に、制御部１０８は、ポインタ情報管理テーブルを更新する（ステップＳ２０４）。すなわち、制御部１０８は、ポインタ情報管理テーブルに、画像投影装置１と新たに接続した端末装置２の欄を新たに設け、当該端末装置２に割り当てられたポインタ画像の画像ファイル名及びポインタの位置情報を、当該端末装置２の名称と関連付けて記憶する。

【0128】

なお、このポインタ情報管理テーブルに端末装置２の情報が新たに追加された場合において、ポインタの位置は、端末装置２の表示部の表示領域４０に表示されるため、ポインタ情報管理テーブルの位置情報の欄には、「ｎｏｎｅ」と表示される。また、本実施形態において、各端末装置２に割り当てられるポインタ画像は、ステップＳ２０４の処理にお

いて自動的に割り当てられるようにしているが、各自に選択させるようにしてもよい。

【0129】

次に、制御部１０８は、接続処理が完了したことを端末装置２に対して通知する（ステップＳ２０５）。この処理が終了したとき、或いはステップＳ２００において、端末装置２から接続要求信号を受信していないとき（ステップＳ２００：Ｎｏ）、制御部１０８は、接続処理を終了する。

【0130】

次に、ステップＳ１２０における画像属性情報更新処理について、図１６を用いて具体的に説明する。図１６は、本実施形態における画像投影装置１の画像属性情報更新処理フローチャートである。

【0131】

図１６に示すように、画像属性情報更新処理を開始すると、制御部１０８は、端末装置２から送信される画像属性情報に画像属性情報の追加フラグがセットされているか否かを判定する（ステップＳ３００）。この処理において、画像属性情報の新規追加が行われたと判定すると（ステップＳ３００：Ｙｅｓ）、制御部１０８は、仮想表示領域４５に新たに位置することとなった画像の画像属性情報を画像属性情報管理テーブルに新たに追加し（ステップＳ３０１）、さらに、当該画像の画像データの保存領域を確保する（ステップＳ３０２）。

【0132】

ステップＳ３０２の処理を終了すると、制御部１０８は、階層レベル更新処理として、画像属性情報管理テーブルで管理されている各画像の階層レベルの情報を更新する（ステップＳ３０３）。すなわち、制御部１０８は、仮想表示領域４５に新たに追加された画像の階層レベルを「１」とし、その他の画像については、現在割り当てられている階層レベルよりも一つ下の階層に順次繰り下げて更新される（例えば、階層レベルが「２」に設定されていた画像は、「３」に更新される）。仮想表示領域４５に新たに追加された画像が最前面に表示されるようになるため、複数人による共同作業をスムーズに行うことができる。

【0133】

ステップＳ３００において、端末装置２から送信される画像属性情報に画像属性情報の追加フラグがセットされていないと判定すると（ステップＳ３００：Ｎｏ）、制御部１０８は、端末装置２から送信される画像属性情報に画像属性情報の削除フラグがセットされているか否かを判定する（ステップＳ３０４）。この処理において、画像属性情報の削除がなされたと判定すると（ステップＳ３０４：Ｙｅｓ）、制御部１０８は、削除対象となっている画像の画像属性情報を画像属性情報管理テーブルから削除するとともに（ステップＳ３０５）、他の画像の階層レベルを更新する（ステップＳ３０６）。

【0134】

ステップＳ３０４において、画像属性情報が削除されたと判定しないとき（ステップＳ３０４：Ｎｏ）、制御部１０８は、端末装置２から受信した画像属性情報に基づいて画像属性情報の更新を行う（ステップＳ３０７）。そして、ステップＳ３０７の処理を終了すると、制御部１０８は、階層レベル更新処理として、更新した画像属性情報に基づく画像の階層レベルを「１」とし、その他の画像の階層レベルを順次繰り下げる（ステップＳ３０８）。

【0135】

ステップＳ３０３、Ｓ３０６、Ｓ３０８の処理が終了したとき、制御部１０８は、画像属性情報更新処理を終了する。

【0136】

次に、ステップＳ１３０における表示領域算出処理について、図１７を用いて説明する。図１７は、本実施形態における画像投影装置１の表示領域算出処理フローチャートである。

【0137】

図１７に示すように、表示領域算出処理を開始すると、制御部１０８は、ステップＳ１２０における画像属性情報更新処理がなされたか否かを判定する（ステップＳ４００）。この処理において、画像属性情報更新処理がなされたと判定すると（ステップＳ４００：Ｙｅｓ）、制御部１０８は、画像属性情報管理テーブルから各端末装置２の画像属性情報を取得する（ステップＳ４０１）。

【0138】

次に、制御部１０８は、取得した画像属性情報に基づいて、画像投影装置１の投影領域６０に表示すべき表示領域を各画像ごとに算出する（ステップＳ４０２）。すなわち、本実施形態においては、各端末装置２に画像データの送信を要求する前に、画像投影装置１の投影領域６０に表示される各画像の表示領域を算出することとしている。このように、各画像の表示領域を事前に算出することにより、後述する画像投影処理において端末装置２に画像データの送信を要求する際、例えば、図１８に示すように、画像３０ｇのうち、各画像を合成した際に投影領域６０に表示されない部分３５の画像データは送信しないように指示することができるため、余計な画像データを送信することがなく、通信経路３に余分な負担をかけることがない。

【0139】

なお、ステップＳ４０２の処理において、表示領域の算出は、階層の低い画像から順次行われる。このようにすることにより、計算量を減らすことができるため、処理速度を上げることができる。

【0140】

次に、制御部１０８は、全ての画像の表示領域を算出したか否かを判定する（ステップＳ４０３）。ここで、本実施形態においては、上述のように、最下層の階層レベルに設定されている画像から順に表示領域の計算をしていくため、上記判定は、最上層の階層レベルに設定されている画像の表示領域の算出が行われたか否かにより判定される。この処理において、全ての画像の表示領域を算出したと判定しないとき（ステップＳ４０３：Ｎｏ）、制御部１０８は、処理をステップＳ４０２に移行する。一方、ステップＳ４０３において全ての画像の表示領域を算出したと判定したとき（ステップＳ４０３：Ｙｅｓ）、或いはステップＳ４００において画像属性情報更新処理がなされたと判定しないとき（ステップＳ４００：Ｎｏ）、制御部１０８は、表示領域算出処理を終了する。

【0141】

次に、ステップＳ１６０における画像投影処理について図１９を用いて具体的に説明する。図１９は、本実施形態における画像投影装置１の画像投影処理フローチャートである。

【0142】

図１９に示すように、画像投影処理を開始すると、制御部１０８は、ステップＳ１３０における表示領域算出処理が行われたか否かを判定する（ステップＳ６００）。この処理において、表示領域算出処理が行われたと判定すると（ステップＳ６００：Ｙｅｓ）、制御部１０８は、処理をステップＳ６０１に移行する。

【0143】

ステップＳ６０１において、制御部１０８は、画像投影装置１に投影される画像の一部が隠れるか否かを判定する。この判定は、ステップＳ１３０の表示領域算出処理における算出結果に基づいて行われる。この処理において、画像投影装置１に投影される画像の一部が隠れると判定しないとき（ステップＳ６０１：Ｙｅｓ）、制御部１０８は、端末装置２に対して画像データの全てを送信するよう画像送信要求信号を送信する（ステップＳ６０２）。

【0144】

一方、ステップＳ６０１において、画像投影装置１に投影される画像の一部が隠れると判定すると（ステップＳ６０１：Ｎｏ）、制御部１０８は、表示領域算出処理において算出された結果に基づいて、画像を表示すべき表示領域を複数の矩形領域に分割する（ステップＳ６０３）。すなわち、例えば、図２０に示すように、画像３０ｇのうち一部の画像

３５が隠れて表示されない場合、制御部１０８は、この画像３０ｇのうち画像投影装置１で表示される部分を矩形領域３８ａと３８ｂとに分割する。そして、制御部１０８は、端末装置２に対して矩形領域毎に画像データの送信を要求する画像データ要求信号を送信する（ステップＳ６０４）。

【0145】

ステップＳ６０２、Ｓ６０４の処理が終了すると、制御部１０８は、端末装置２から画像データを受信したか否かを判定する（ステップＳ６０５）。この処理において、端末装置２から画像データを受信したと判定すると（ステップＳ６０５：Ｙｅｓ）、制御部１０８は、受信した画像データの伸長を行う（ステップＳ６０６）。これは、後述するように、端末装置２から送信される画像データは、圧縮された状態で送信されるためである。

【0146】

次に、制御部１０８は、画像属性情報更新処理において確保した画像データの保存領域に受信した画像データを保存し（ステップＳ６０７）、当該画像データを指定された表示領域に貼り付ける（ステップＳ６０８）。次に、制御部１０８は、各端末装置２の仮想表示領域４５にある画像の画像データの貼り付けが全てなされたか否かを判定する（ステップＳ６０９）。この処理において、当該画像データの貼り付けが全てなされたと判定すると（ステップＳ６０９：Ｙｅｓ）、制御部１０８は、処理をステップＳ６１２に移行し、当該画像データの貼り付けが全てなされたと判定しないとき（ステップＳ６０９：Ｎｏ）、処理をステップＳ６０１に移行する。すなわち、ステップＳ６０１～Ｓ６０８までの処理は、各画像データごとに行われるものであり、ステップＳ６０８において、各画像データを表示領域に貼り付けていくことにより、各端末装置２の仮想表示領域４５にある画像の画像データの合成が行われる。

【0147】

一方、ステップＳ６００において、表示領域の算出がなされたと判定しないとき（ステップＳ６００：Ｎｏ）、制御部１０８は、ポインタ情報管理テーブルが更新されたか否かを判定する（ステップＳ６１０）。この処理において、ポインタ情報管理テーブルが更新されたと判定すると（ステップＳ６１０：Ｙｅｓ）、制御部１０８は、更新されたポインタ情報に基づいて、ポインタ画像の画像データを画像投影装置１の投影領域６０に投影される画像の画像データと合成し（ステップＳ６１１）、処理をステップＳ６１２に移行する。

【0148】

ステップＳ６１２において、制御部１０８は、ステップＳ６０８の処理において合成された画像データ、或いはステップＳ６１１の処理において合成された画像データに基づく画像を画像投影部１０７より投影する（ステップＳ６１２）。ステップＳ６１２の処理を終了すると、制御部１０８は、画像投影処理を終了する。

【0149】

次に、ステップＳ１８０における操作命令振り分け処理について、図２１を用いて具体的に説明する。図２１は、本実施形態における画像投影装置１の操作命令振り分け処理フローチャートである。

【0150】

図２１に示すように、操作命令振り分け処理を開始すると、制御部１０８は、ポインタ情報管理テーブルを参照して、画像操作命令を送信した端末装置２のポインタの位置情報を取得する（ステップＳ７００）。次に、制御部１０８は、取得したポインタの位置座標を含む画像データを画像属性情報管理テーブルを参照して特定することにより、当該画像データを送信した端末装置２（オーナーＰＣ）を特定し（ステップＳ７０１）、特定した端末装置２に対して画像操作命令を送信する（ステップＳ７０２）。この処理を終了すると、制御部１０８は、操作命令振り分け処理を終了する。

【0151】

（端末装置の具体的動作について）

次に、端末装置２の具体的動作の一例について、図２２～図２７を参照して説明する。

図２２は、本実施形態における端末装置２のメイン処理フローチャートである。

【0152】

図２２に示すように、端末装置２の電源スイッチ（図示せず）が押下されたとき、端末装置２の制御部２０８は、接続処理を行う（ステップＳ１０００）。この接続処理は、画像投影装置１と通信経路３を介して接続するための処理である。この処理は、図２３におけるステップＳ１１００～Ｓ１１０４までの処理であり、後述する。

【0153】

ステップＳ１０００における接続処理が終了すると、制御部２０８は、処理をステップＳ１０１０の画像属性情報送信処理に移行する。この画像属性情報送信処理は、仮想表示領域４５にある画像に対してなされた操作に応じて画像属性情報通知データを作成し、この画像属性情報通知データを画像投影装置１に対して送信するものである。この処理は、図２４におけるステップＳ１２００～Ｓ１２０９までの処理である、後述する。

【0154】

ステップＳ１０１０における画像属性情報送信処理が終了すると、制御部２０８は、処理をステップＳ１０２０の操作命令送信処理に移行する。この操作命令送信処理は、キーボード２０６又はマウス２０７により、画像投影装置１で投影されている画像が操作又は指示されたときに、この操作又は指示に基づく画像操作命令を画像投影装置１に対して送信するものである。この処理は、図２５におけるステップＳ１３００～Ｓ１３０５までの処理である、後述する。

【0155】

ステップＳ１０２０における操作命令送信処理が終了すると、制御部２０８は、処理をステップＳ１０３０の画像データ送信処理に移行する。この画像データ送信処理は、画像投影装置１から送信される画像送信要求に基づいて、画像投影装置１に対して画像データの送信を行うものである。この処理は、図２６におけるステップＳ１４００～Ｓ１４０２までの処理である、後述する。

【0156】

ステップＳ１０３０における画像データ送信処理が終了すると、制御部２０８は、処理をステップＳ１０４０の操作命令再生処理に移行する。この操作命令再生処理は、画像投影装置１から送信される画像操作命令に基づいて、仮想表示領域４５にある画像のデータファイルの編集を行うものである。この処理は、図２７におけるステップＳ１５００～Ｓ１５０２までの処理である、後述する。

【0157】

ステップＳ１０４０における接続処理が終了すると、制御部２０８は、画像投影装置１との接続状態が解除されたか否かを判定する（ステップＳ１０５０）。この処理において、画像投影装置１との接続状態が解除されていないと判定すると（ステップＳ１０５０：Ｎｏ）、制御部２０８は、処理をステップＳ１０１０に移行する。一方、画像投影装置１との接続状態が解除されたと判定すると（ステップＳ１０５０：Ｙｅｓ）、制御部２０８は、メイン処理を終了する。

【0158】

次に、ステップＳ１０００における接続処理について、図２３を用いて具体的に説明する。図２３は、本実施形態における端末装置２の接続処理フローチャートである。

【0159】

図２３に示すように、接続処理を開始すると、制御部２０８は、画像投影装置１に対して接続要求信号を送信する（ステップＳ１１００）。

【0160】

次に、制御部２０８は、画像投影装置１から解像度の情報を受信したか否かを判定する（ステップＳ１１０１）。この処理において、画像投影装置１から解像度の情報を受信したと判定すると（ステップＳ１１０１：Ｙｅｓ）、制御部２０８は、ＬＣＤ２００による表示領域に隣接した仮想表示領域４５を作成する（ステップＳ１１０２）。この際、作成される仮想表示領域４５の解像度は、ステップＳ１１０１で画像投影装置１から受信した

解像度の情報に基づき設定される。

【0161】

ステップＳ１１０２の処理が終了すると、制御部２０８は、起動準備が完了したことを画像投影装置１に通知する（ステップＳ１１０３）。そして、制御部２０８は、画像投影装置１から接続完了通知を受信したか否かを判定し（ステップＳ１１０４）、画像投影装置１から接続完了通知を通知したと判定すると（ステップＳ１１０４：Ｙｅｓ）、制御部２０８は、接続処理を終了する。

【0162】

次に、ステップＳ１０１０における画像属性情報送信処理について、図２４を用いて具体的に説明する。図２４は、本実施形態における端末装置２の画像属性情報送信処理フローチャートである。

【0163】

図２４に示すように、画像属性情報送信処理を開始すると、制御部２０８は、仮想表示領域４５に画像が追加されたか否かを判定する（ステップＳ１２００）。この判定は、使用者がマウス２０７を用いて、ＬＣＤ２００の表示領域にある画像に対して所定の操作がなされたか否かにより判定される。ここで、所定の操作とは、ＬＣＤ２００の表示領域にある画像を仮想表示領域４５に移動させる、或いは当該画像に設けられている所定のボタンを押下することにより行われる。この処理において、仮想表示領域４５に画像が追加されたと判定すると（ステップＳ１２００：Ｙｅｓ），制御部２０８は、処理をステップＳ１２０１に移行する。

【0164】

ステップＳ１２０１において、制御部２０８は、仮想表示領域４５に新たに追加された画像の画像属性情報を取得し（ステップＳ１２０１）、画像属性情報の追加フラグをセットする（ステップＳ１２０２）。

【0165】

ステップＳ１２００において、仮想表示領域４５に画像が追加されたと判定しないとき（ステップＳ１２００：Ｎｏ）、制御部２０８は、仮想表示領域４５にある画像が仮想表示領域４５外に移動したか、又は削除されたか否かを判定する（ステップＳ１２０３）。この処理において、仮想表示領域４５にある画像が仮想表示領域４５外に移動した、又は削除されたと判定すると（ステップＳ１２０３：Ｙｅｓ）、制御部２０８は、仮想表示領域４５から移動又は削除された画像のウィンドウＩＤを取得し（ステップＳ１２０４）、画像属性情報の削除フラグをセットする（ステップＳ１２０５）。

【0166】

ステップＳ１２０３において、仮想表示領域４５にある画像が仮想表示領域４５外に移動した、又は削除されたと判定しないとき（ステップＳ１２０３：Ｎｏ）、制御部２０８は、仮想表示領域４５にある画像の画像属性情報が更新されたか否かを判定する（ステップＳ１２０６）。この判定は、仮想表示領域４５にある画像の位置やサイズが変更されたか否かにより判定される。この処理において、仮想表示領域４５にある画像の画像属性情報が更新されたと判定すると（ステップＳ１２０６：Ｙｅｓ）、制御部２０８は、当該更新された画像属性情報を取得する（ステップＳ１２０７）。

【0167】

ステップＳ１２０２、Ｓ１２０５、Ｓ１２０７の処理が終了したとき、制御部２０８は、各処理の結果に応じた画像属性情報通知データを作成し（ステップＳ１２０８）、画像投影装置１に対して通信経路３を介して送信する（ステップＳ１２０９）。すなわち、仮想表示領域４５に新たに画像が追加された場合は、追加された画像の画像属性情報のうち、当該画像のウィンドウＩＤ、位置情報、サイズ情報、画像データのファイル名の情報、及び画像属性情報の追加フラグデータを含む画像属性情報通知データを作成し、画像投影装置１に送信する。また、仮想表示領域４５にある画像が仮想表示領域４５外に移動されたとき、或いは削除されたときは、移動、或いは削除された画像のウィンドウＩＤ、及び画像属性情報の削除フラグデータを含むウィン情報通知データを作成し、画像投影装置１

に送信する。また、画像属性情報が更新されたときは、更新された画像の画像属性情報を含む画像属性情報通知データを作成し、画像投影装置１に送信する。

【0168】

ステップＳ１２０９の処理が終了したとき、或いはステップＳ１２０６において、画像属性情報が更新されたと判定しないとき（ステップＳ１２０６：Ｎｏ）、制御部２０８は、画像属性情報送信処理を終了する。

【0169】

次に、ステップＳ１０２０における操作命令送信処理について図２５を用いて具体的に説明する。図２５は、本実施形態における端末装置２の操作命令送信処理フローチャートである。

【0170】

図２５に示すように、操作命令送信処理を開始すると、制御部２０８は、キーボード２０６或いはマウス２０７によって画像投影装置１で投影されている画像に対して操作入力が行われたか否かを判定する（ステップＳ１３００）。この処理において、操作入力が行われたと判定すると（ステップＳ１３００：Ｙｅｓ）、制御部２０８は、この操作入力に基づく操作入力情報を取得とともに（ステップＳ１３０１）、当該操作入力に基づく操作が自分の端末装置２で実行されることを防ぐために、操作入力情報を破棄する（ステップＳ１３０２）。

【0171】

次に、制御部２０８は、画像投影装置１の投影領域６０に表示されているポインタの位置情報を取得し（ステップＳ１３０３）、このポインタの位置情報と操作入力情報とを含む画像操作命令を生成して（ステップＳ１３０４）、この画像操作命令を画像投影装置１に対して通信経路３を介して送信する（ステップＳ１３０５）。

【0172】

ステップＳ１３０５の処理を終了したとき、或いはステップＳ１３００において、画像投影装置１で投影されている画像に対して操作入力が行われたと判定しないとき（ステップＳ１３００：Ｎｏ）、制御部２０８は、操作命令送信処理を終了する。

【0173】

次に、ステップＳ１０３０における画像データ送信処理について、図２６を用いて具体的に説明する。図２６は、本実施形態における画像データ送信処理フローチャートである。

【0174】

図２６に示すように、画像データ送信処理を開始すると、制御部２０８は、画像投影装置１から仮想表示領域４５にある画像の画像データの送信要求があったか否かを判定する（ステップＳ１４００）。この判定は、画像投影装置１から、画像データ送信要求信号を受信したか否かにより判定される。この処理において、画像データの送信要求があったと判定すると（ステップＳ１４００：Ｙｅｓ）、制御部２０８は、受信した画像データ送信要求に基づき、仮想表示領域４５にある画像の一部又は全部の画像データをキャプチャし、当該キャプチャした画像データをＢＭＰ（Bit MaP）形式からＪＰＥＧ（Joint Photographic Experts Group）形式に変換することにより当該画像データを圧縮して（ステップＳ１４０１）、この圧縮した画像データを画像投影装置１に対して通信経路３を介して送信する（ステップＳ１４０２）。ステップＳ１４０２の処理を終了したとき、或いはステップＳ１４００において、画像投影装置１から画像データの送信要求があったと判定しないとき（ステップＳ１４００：Ｎｏ）、制御部２０８は、画像データ送信処理を終了する。

【0175】

次に、ステップＳ１０４０における操作命令再生処理について、図２７を用いて具体的に説明する。図２７は、本実施形態における端末装置２の操作命令送信処理フローチャートである。

【0176】

図２７に示すように、操作命令再生処理を開始すると、制御部２０８は、画像投影装置１から画像操作命令を受信したか否かを判定する（ステップＳ１５００）。この処理において、画像投影装置１から画像操作命令を受信したと判定すると（ステップＳ１５００：Ｙｅｓ）、制御部２０８は、受信した画像操作命令を再生することにより（ステップＳ１５０１）、操作の対象となるデータファイルに応じたアプリケーションプログラムに対して、当該画像操作命令に基づく編集操作を実行させる（ステップＳ１５０２）。

【0177】

以上、本発明の実施の形態のうちのいくつかを図面に基づいて詳細に説明したが、これらは例示であり、当業者の知識に基づいて種々の変形、改良を施した他の形態で本発明を実施することが可能である。

【0178】

例えば、本実施形態においては、各端末装置２の仮想表示領域４５にある画像データを画像投影装置１に送信するタイミングは、画像投影装置１により管理されているが、この画像データを送信するタイミングを各端末装置２が管理するようにしてもよい。

【0179】

画像データの送信タイミングを端末装置２が管理する場合、図２６に示す端末装置２の画像データ送信処理を、以下のようなに変更すればよい。

【0180】

例えば、端末装置２の制御部２０８が、仮想表示領域にある画像に変更があったか否かを判定し、変更があった場合にのみ画像データを送信するようにしてもよい。

【0181】

すなわち、図２８に示すように、画像データ送信処理を開始すると、制御部２０８は、画像投影装置１に前回送信した画像データから変更があったか否かを判定する（ステップＳ１４６０）。この判定は、画像操作命令を受信したか否か、或いは、端末装置２のＯＳプログラムから再描画メッセージ（例えば、WM_PAINTメッセージ等）を受信したか否かにより判定される。この処理において、画像投影装置１に前回送信した画像データから変更があったと判定すると（ステップＳ１４６０：Ｙｅｓ）、制御部２０８は、仮想表示領域４５にある画像をキャプチャする（ステップＳ１４６１）。次に、制御部２０８は、キャプチャした画像データを圧縮し（ステップＳ１４６２）、圧縮した画像データを画像投影装置１に通信経路３を介して送信する（ステップＳ１４６３）。そして、ステップＳ１４６３の処理を終了したとき、或いは、ステップＳ１４６０において前回送信した画像データから変更があったと判定しないとき（ステップＳ１４６０：Ｎｏ）、制御部２０８は、画像データ送信処理を終了する。

【0182】

また、上記変形例において、前回送信した画像データから変更があったときに、画像データの全てを送信するのではなく、前回送信した画像データとの差分の画像データのみを送信するようにしてもよい。

【0183】

すなわち、図２９に示すように、画像データ送信処理を開始すると、制御部２０８は、仮想表示領域４５にある画像をキャプチャする（ステップＳ１４５０）。

【0184】

次に、制御部２０８は、画像投影装置１に前回送信した画像データから変更があったか否かを判定する（ステップＳ１４５１）。この処理において、画像投影装置１に前回送信した画像データから変更があったと判定すると（ステップＳ１４５１：Ｙｅｓ）、制御部２０８は、前回送信した画像の画像データと今回キャプチャした画像の画像データとの差分を抽出し、差分の画像データを保存する（ステップＳ１４５２）。そして、この差分の画像データを圧縮し（ステップＳ１４５３）、圧縮した画像データを画像投影装置１に送信する（ステップＳ１４５４）。そして、この処理を終了したとき、或いは、ステップＳ１４５１において前回送信した画像データから変更があったと判定しないとき（ステップＳ１４５１：Ｎｏ）、制御部２０８は、画像データ送信処理を終了する。

【0185】
ここで、上記のように画像データの送信タイミングを端末装置２が管理する場合は、画像投影装置１の画像投影処理におけるステップＳ６０１～Ｓ６０９までの処理を次のように変更するとよい。
【0186】
すなわち、図３０に示すように、図１９のステップＳ６００において、表示領域が算出されたと判定すると（ステップＳ６００：Ｙｅｓ）画像投影装置１の制御部１０８は、端末装置２から画像データを受信したか否かを判定する（ステップＳ６７１）。この処理において、端末装置２から画像データを受信したと判定すると（ステップＳ６７１：Ｙｅｓ）、処理をステップＳ６７２に移行する。ステップＳ６７２～Ｓ６７４までの処理は、図１９におけるステップＳ６０６～Ｓ６０８までの処理と同一であるため、説明を省略する。そして、ステップＳ６７４の処理を終了したとき、或いはステップＳ６７１において、端末装置２から画像データを受信したと判定しないとき（ステップＳ６７１：Ｎｏ）、制御部１０８は、処理をステップＳ６１２に移行する。
【0187】
また、図１９におけるステップＳ６０１～Ｓ６０９までの処理は、各端末装置２の仮想表示領域４５にある画像の画像データを全てを取得し、各画像データに割り当てられた表示領域に当該画像データを貼り付けるようにしているが、画像投影装置１で投影される際に最前面で表示される画像の画像データのみを取得するようにしてもよい。
【0188】
すなわち、図３１に示すように、ステップＳ６００において、表示領域が算出されたと判定すると（ステップＳ６００：Ｙｅｓ）、制御部１０８は、画像属性情報管理テーブルを参照し、各画像データに割り当てられた階層レベルが「１」であるか否かを判定する（ステップＳ６５１）。この処理において、階層レベルが「１」であると判定しないとき（ステップＳ６５１：Ｎｏ）、制御部１０８は、処理をステップＳ６５７に移行する。
【0189】
一方、階層レベルが「１」であると判定すると（ステップＳ６５１：Ｙｅｓ）、制御部１０８は、階層レベルが「１」に設定されている画像データを送信した端末装置２（オーナーＰＣ）に対して、画像データ送信要求信号を送信し（ステップＳ６５２）、処理をステップＳ６５４に移行する。ここでステップＳ６５４～Ｓ６５６までの処理は、図１９におけるステップＳ６０６～Ｓ６０８までの処理と同一であるため、説明を省略する。
【0190】
ステップＳ６５６の処理を終了すると、制御部１０８は、画像属性情報管理テーブルに管理されている画像データの階層レベルを全て参照したか否かを判定する（ステップＳ６５７）。この処理において、全ての画像データの階層レベルを参照したと判定しないとき（ステップＳ６５７：Ｎｏ）、制御部１０８は、処理をステップＳ６５１に移行する。一方、ステップＳ６５７において、全ての画像データの階層レベルを参照したと判定すると（ステップＳ６５７：Ｙｅｓ）、制御部１０８は、処理を図１９のステップＳ６１２に移行する。
【0191】
また、本実施形態においては、端末装置２の画像データ処理において、端末装置２の制御部２０８は、画像投影装置１から送信される画像データの送信要求に基づいて画像データの送信を行うこととしているが、各端末装置２の仮想表示領域４５にある複数の画像のうち、最前面に表示されている画像の画像データのみを画像投影装置１に送信することとしてもよい。
【0192】
すなわち、図３２に示すように、画像データ送信処理を開始すると、端末装置２の制御部２０８は、一定時間が経過したか否かを判定する（ステップＳ１４７０）。この処理において、一定時間が経過したと判定すると（ステップＳ１４７０：Ｙｅｓ）、制御部２０８は、仮想表示領域４５にある複数の画像のうち、最前面にある画像のみをキャプチャす

る（ステップＳ１４７１）。次に、制御部２０８は、キャプチャした画像データを圧縮し（ステップＳ１４７２）、圧縮した画像データを画像投影装置１に通信経路３を介して送信する（ステップＳ１４７３）。そして、ステップＳ１４７３の処理を終了したとき、或いは、ステップＳ１４７０において一定時間が経過したと判定しないとき（ステップＳ１４７０：Ｎｏ）、制御部２０８は、画像データ送信処理を終了する。

【図面の簡単な説明】

【0193】

【図1】本実施形態における画像投影システムの全体的なシステム構成を示す図である。

【図2】本実施形態における画像投影システムに用いられる画像投影装置の概略構成図である。

【図3】本実施形態における画像投影システムに用いられる端末装置の概略構成図である。

【図4】本実施形態の画像投影システムにおける接続動作の一例を示すシーケンス図である

【図5】本実施形態の画像投影システムにおける投影動作の一例を示すシーケンス図である。

【図6】本実施形態の画像投影システムにおける編集動作の一例を示すシーケンス図である。

【図7】本実施形態における画像投影装置の構成図である。

【図8】本実施形態における画像投影装置に記憶される画像属性情報管理テーブルの一例を示す図である。

【図9】本実施形態における画像投影装置の投影領域に規定された座標を説明するための図である。

【図10】本実施形態における画像投影装置に記憶される接続情報管理テーブルの一例である。

【図11】本実施形態における画像投影装置に記憶されるポインタ情報管理テーブルの一例である。

【図12-a】本実施形態における画像投影装置の画像処理の一例を示す図である。

【図12-b】本実施形態における画像投影装置の画像処理の一例を示す図である。

【図13】本実施形態における端末装置の構成図である。

【図14】本実施形態における画像投影装置のメイン処理フローチャートである。

【図15】本実施形態における画像投影装置の接続処理フローチャートである。

【図16】本実施形態における画像投影装置の画像属性情報更新処理フローチャートである。

【図17】本実施形態における画像投影装置の表示領域算出処理フローチャートである。

【図18】本実施形態における画像投影装置の表示領域算出処理において算出される各画像データの表示領域の概略図である。

【図19】本実施形態における画像投影装置の画像投影処理フローチャートである。

【図20】本実施形態における画像投影装置の画像投影処理において、画像データの表示領域が矩形領域に分割される際の分割の態様の一例を示した説明図である。

【図21】本実施形態における画像投影装置の操作命令振り分け処理フローチャートである。

【図22】本実施形態における端末装置のメイン処理フローチャートである。

【図23】本実施形態における端末装置の接続処理フローチャートである。

【図24】本実施形態における端末装置の画像属性情報送信処理フローチャートである。

【図25】本実施形態における端末装置の操作命令送信処理フローチャートである。

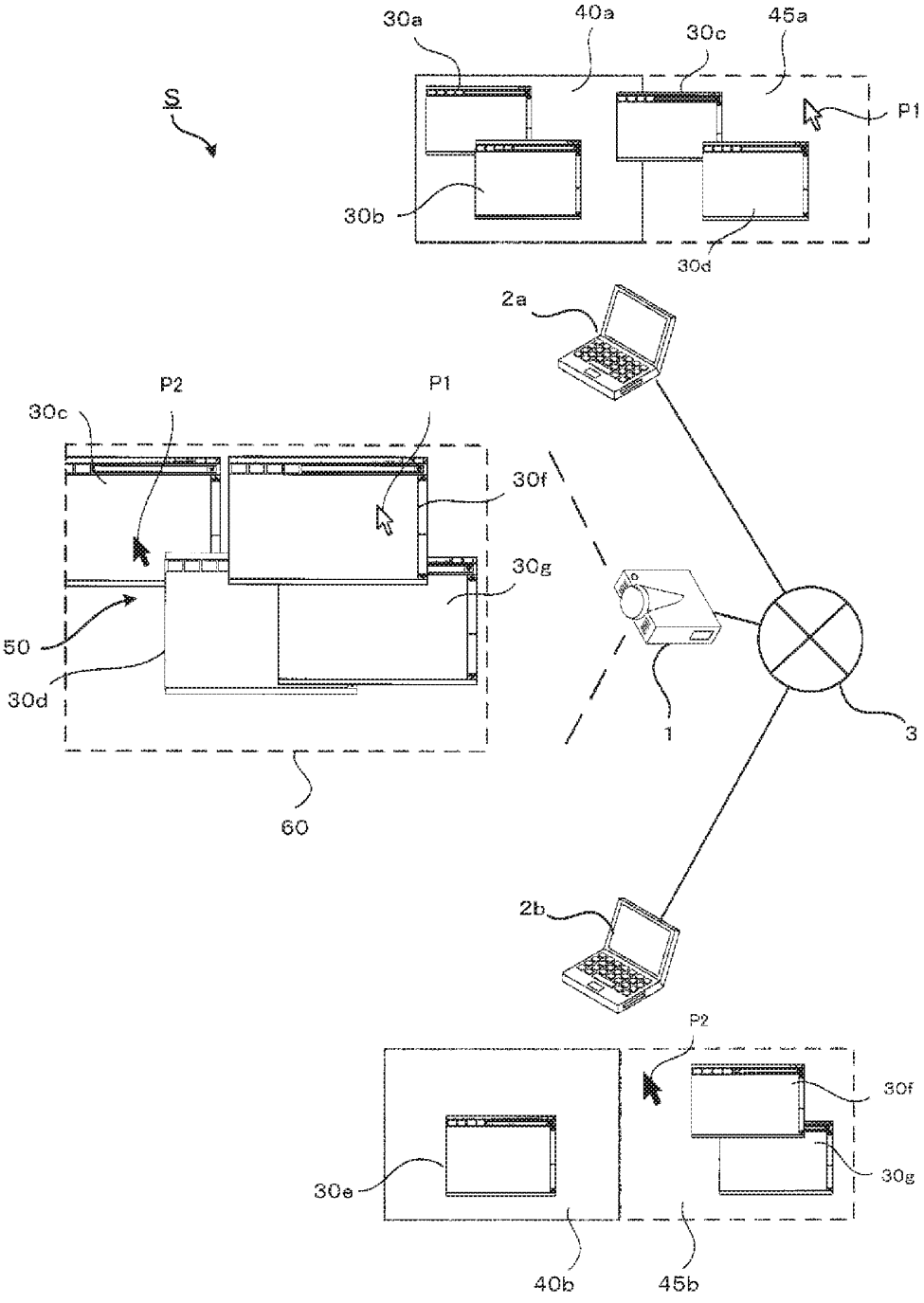
【図26】本実施形態における端末装置の画像データ送信処理フローチャートである。

【図27】本実施形態における端末装置の操作命令送信処理フローチャートである。

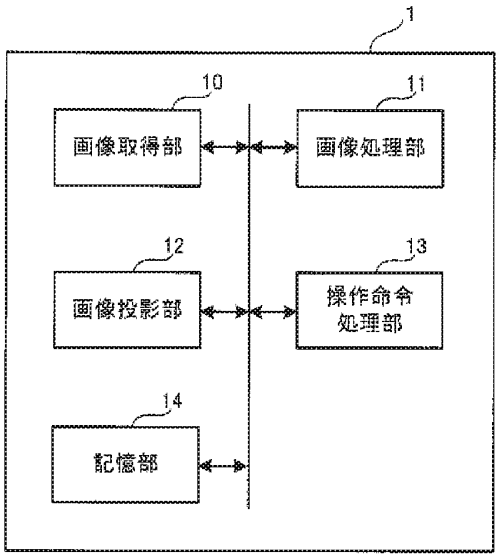
【図28】本実施形態における端末装置の画像データ送信処理の変形例を示すフローチャートである。

【図29】本実施形態における端末装置の画像データ送信処理の変形例を示すフローチャートである。
【図30】本実施形態における画像投影装置の画像投影処理の変形例を示すフローチャートである。
【図31】本実施形態における画像投影装置の画像投影処理の変形例を示すフローチャートである。
【図32】本実施形態における端末装置の画像データ送信処理の変形例を示すフローチャートである。
【図33】従来例の説明図である。
【符号の説明】
【0194】
Ｓ　画像投影システム
１　画像投影装置
２　端末装置
３　通信経路

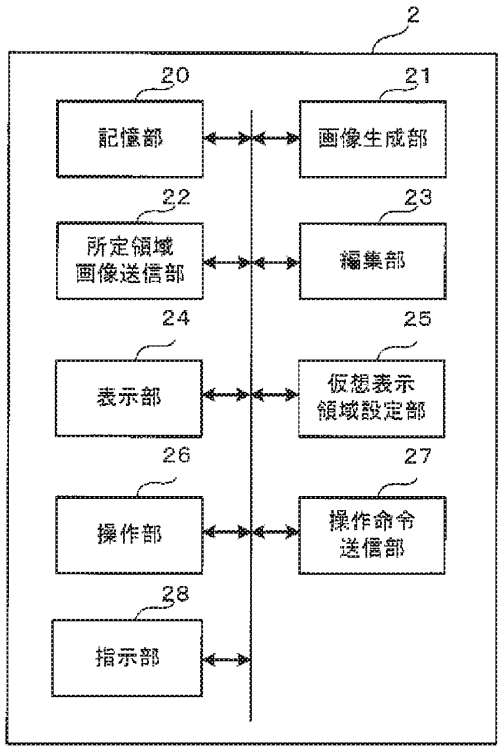
【図1】


S
30a
40a
30c
45a
P1
30b
30d
2a
P2
P1
30c
30f
30g
50
30d
60
1
3
2b
P2
30f
30e
30g
40b
45b

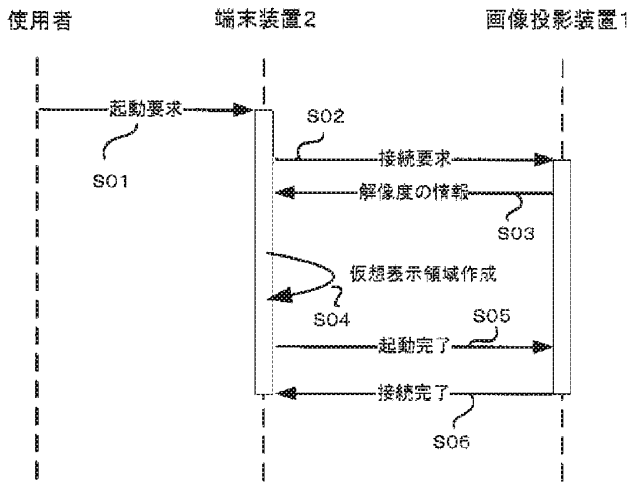
【図2】


1
10
画像取得部
11
画像処理部
12
画像投影部
13
操作命令
処理部
14
記憶部

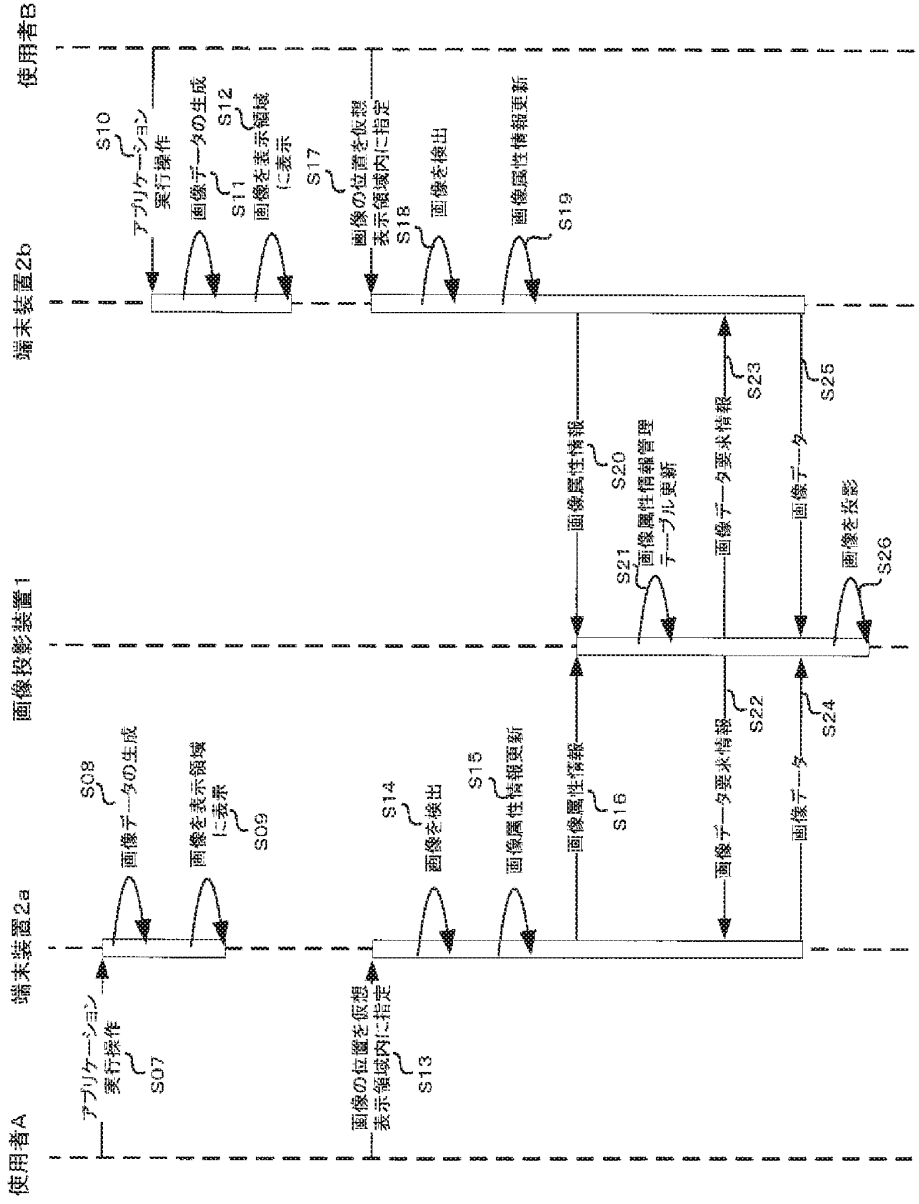
【図3】


2
20
記憶部
21
画像生成部
22
所定領域
画像送信部
23
編集部
24
表示部
25
仮想表示
領域設定部
26
操作部
27
操作命令
送信部
28
指示部

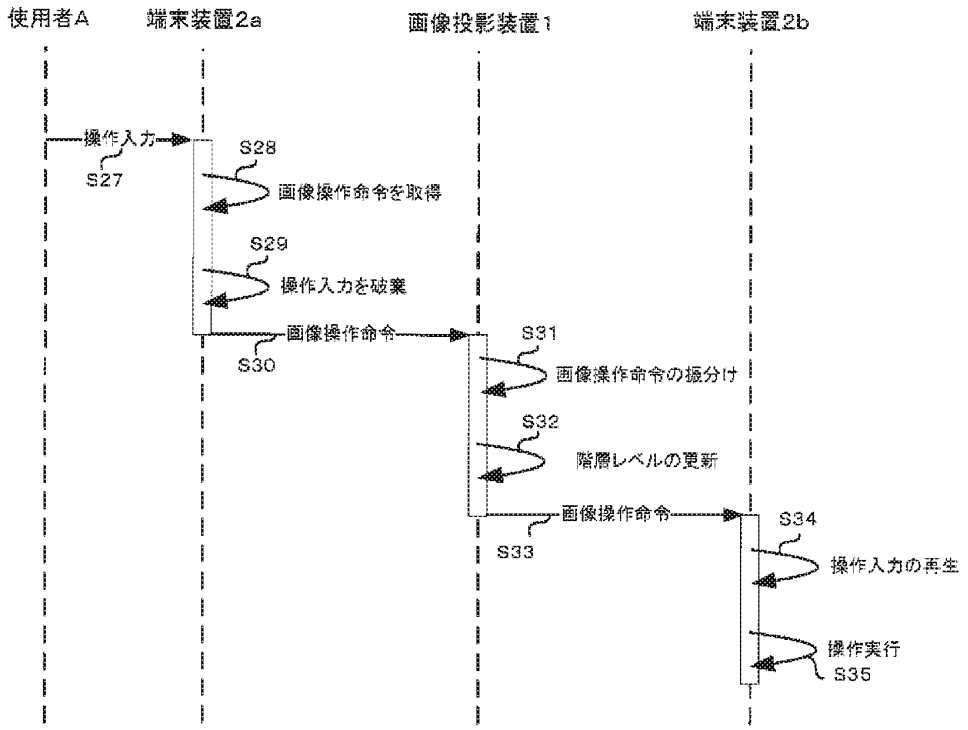
【図4】


使用者
端末装置2
画像投影装置1
起動要求
S01
S02
接続要求
解像度の情報
S03
仮想表示領域作成
S04
S05
起動完了
接続完了
S06

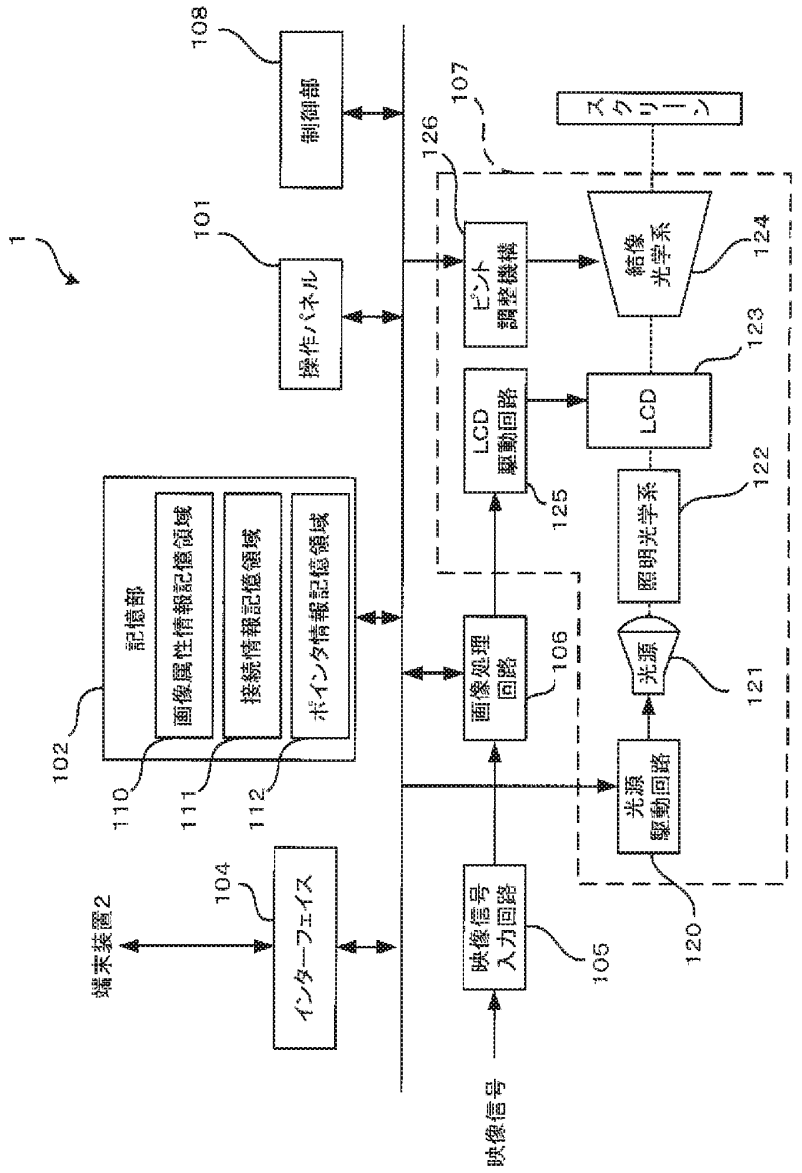
【図5】


使用者A
端末装置2a
画像投影装置1
端末装置2b
使用者B
アプリケーション実行操作
S07
画像データの生成
S08
画像を表示領域に表示
S09
画像の位置を仮想表示領域内に指定
S13
画像を検出
S14
画像属性情報更新
S15
画像属性情報
S16
画像データ要求情報
S22
画像データ
S24
アプリケーション実行操作
S10
画像データの生成
S11
画像を表示領域に表示
S12
画像の位置を仮想表示領域内に指定
S17
画像を検出
S18
画像属性情報更新
S19
画像属性情報
S20
画像属性情報管理テーブル更新
S21
画像データ要求情報
S23
画像データ
S25
画像を投影
S26

【図6】


使用者A
端末装置2a
画像投影装置1
端末装置2b
操作入力
S27
S28
画像操作命令を取得
S29
操作入力を破棄
画像操作命令
S30
S31
画像操作命令の振分け
S32
階層レベルの更新
画像操作命令
S33
S34
操作入力の再生
操作実行
S35

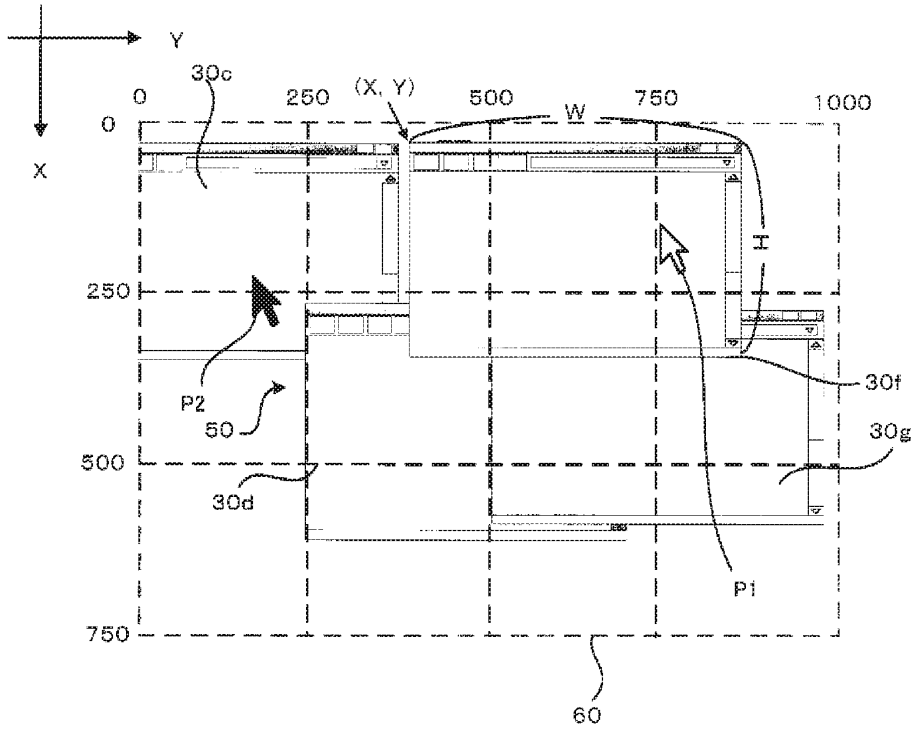
【図7】



【図8】

ウィンドウID	オーナーPC	位置(X,Y)	サイズ(W,H)	ファイル名	階層レベル
w1-1	端末装置2a	(250,270)	(460,300)	gazou_30d.jpg	3
w1-2	端末装置2a	(-100,30)	(480,320)	gazou_30c.jpg	4
w2-1	端末装置2b	(400,30)	(460,310)	gazou_30f.jpg	1
w2-2	端末装置2b	(500,280)	(480,290)	gazou_30g.jpg	2

【図9】



【図10】

オーナーPC	ステータス	IPアドレス
端末装置2a	接続中	192.168.0.1
端末装置2b	接続中	192.168.0.2
PC3	未接続	null
PC4	未接続	null

【図11】

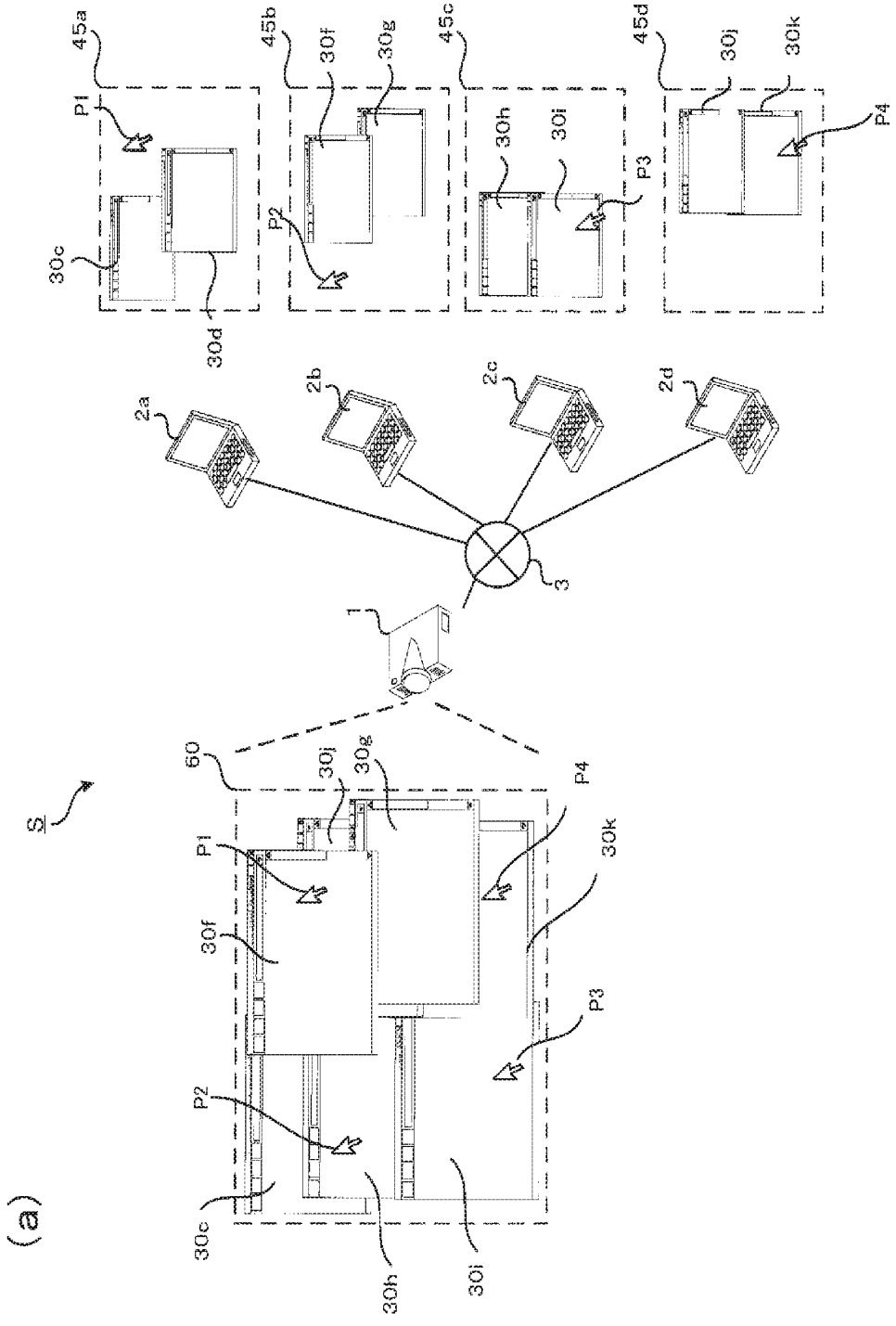
（a）

オーナーPC	位置(X,Y)	ポインタ画像
端末装置2a	(750,180)	mouse1.jpg
端末装置2b	(200,280)	mouse2.jpg

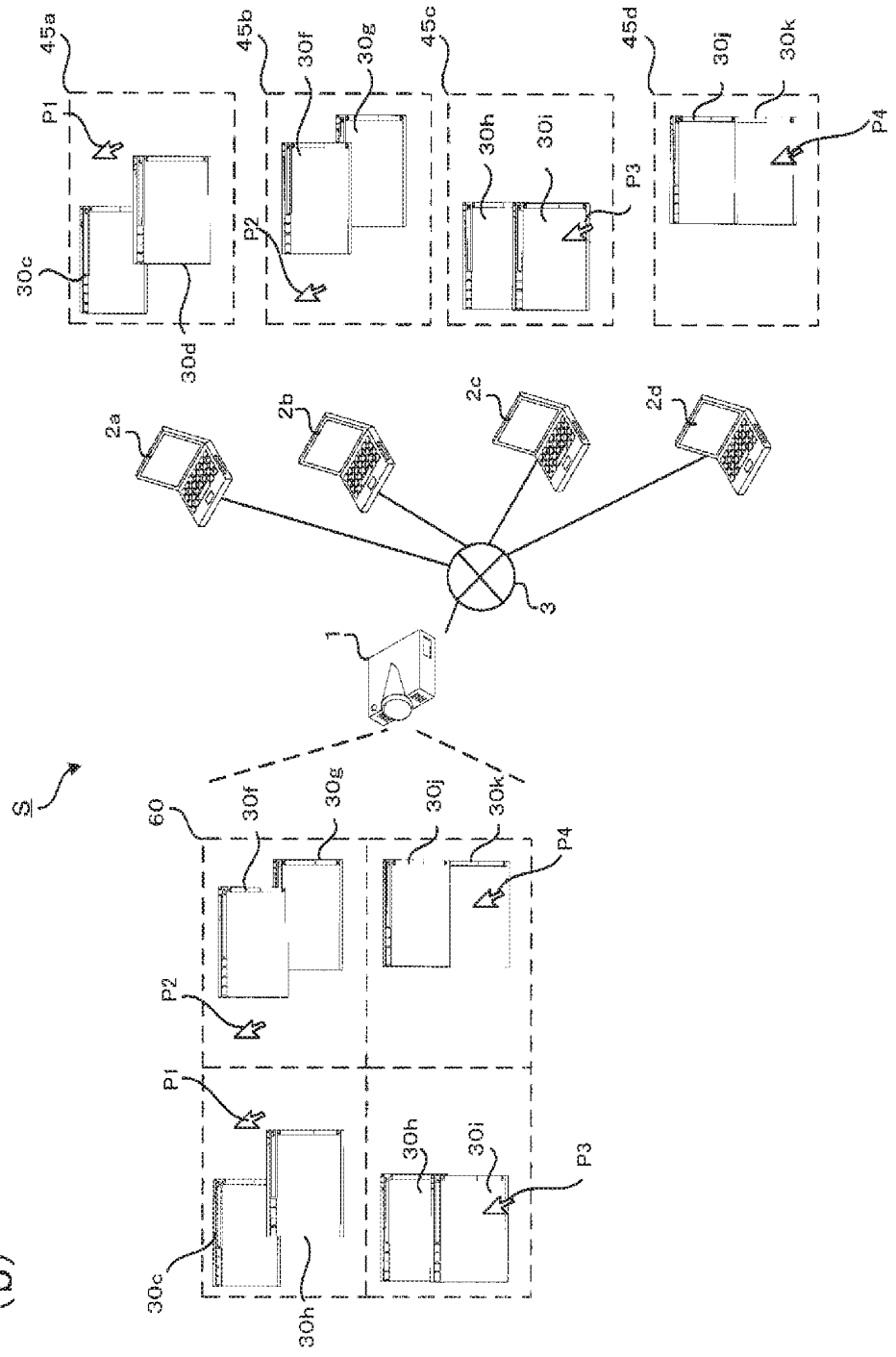
（b）

オーナーPC	位置(X,Y)	ポインタ画像
端末装置2a	(750,180)	mouse1.jpg
端末装置2b	(200,280)	mouse2.jpg
端末装置2c	none	mouse6.jpg

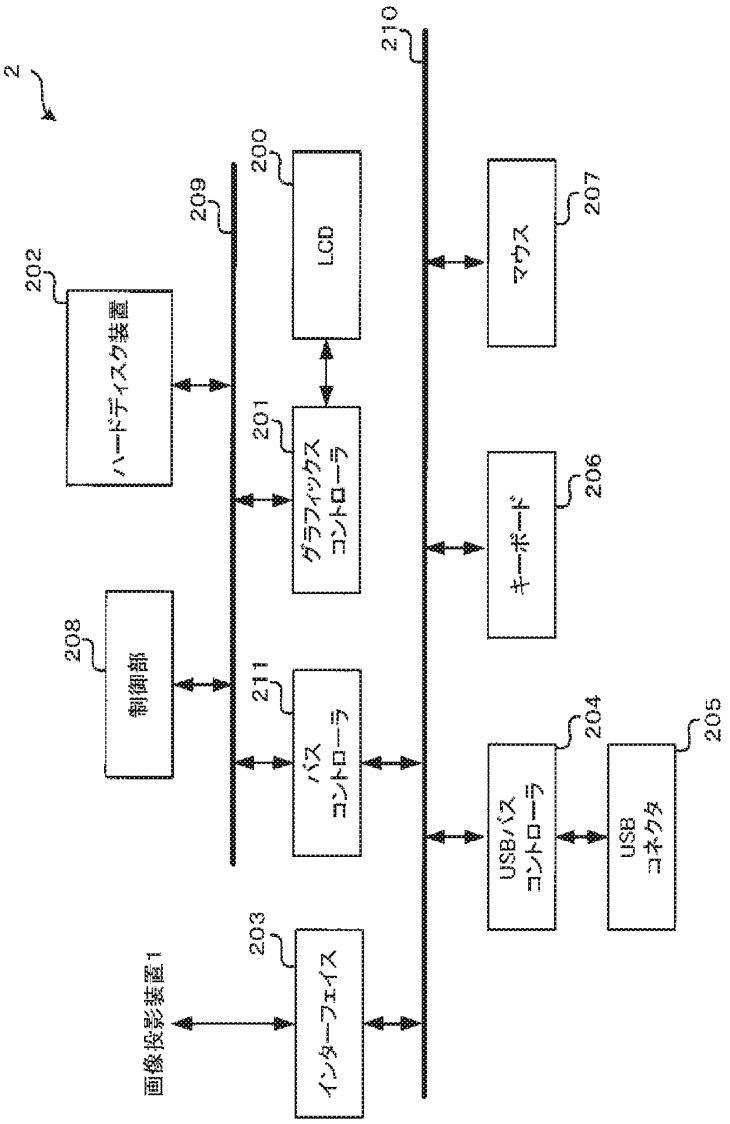
【図12-a】


45a
45b
45c
45d
P1
P2
P3
P4
30c
30d
30f
30g
30h
30i
30j
30k
2a
2b
2c
2d
3
S
60
(a)

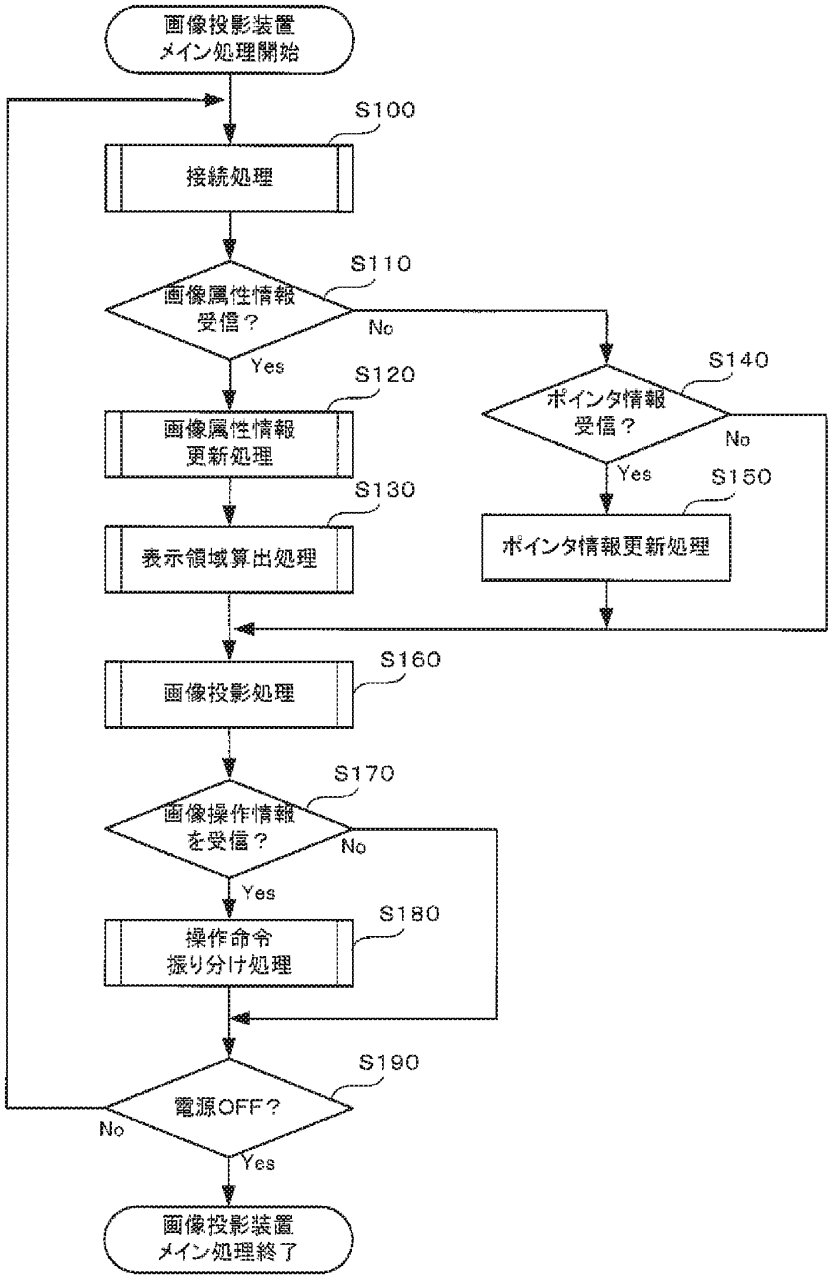
【図12-b】


(b)
S
1
2a
2b
2c
2d
3
45a
45b
45c
45d
60
P1
P2
P3
P4
30c
30d
30f
30g
30h
30i
30j
30k

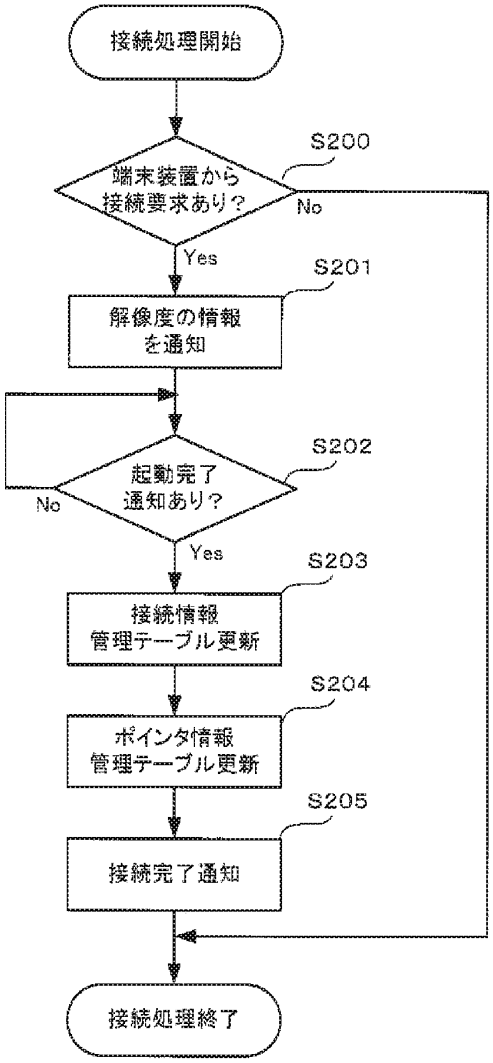
【図13】


2
210
209
200
LCD
マウス
207
202
ハードディスク装置
201
グラフィックス
コントローラ
キーボード
206
208
制御部
211
バス
コントローラ
204
205
USBバス
コントローラ
USB
コネクタ
203
インターフェイス
画像投影装置1

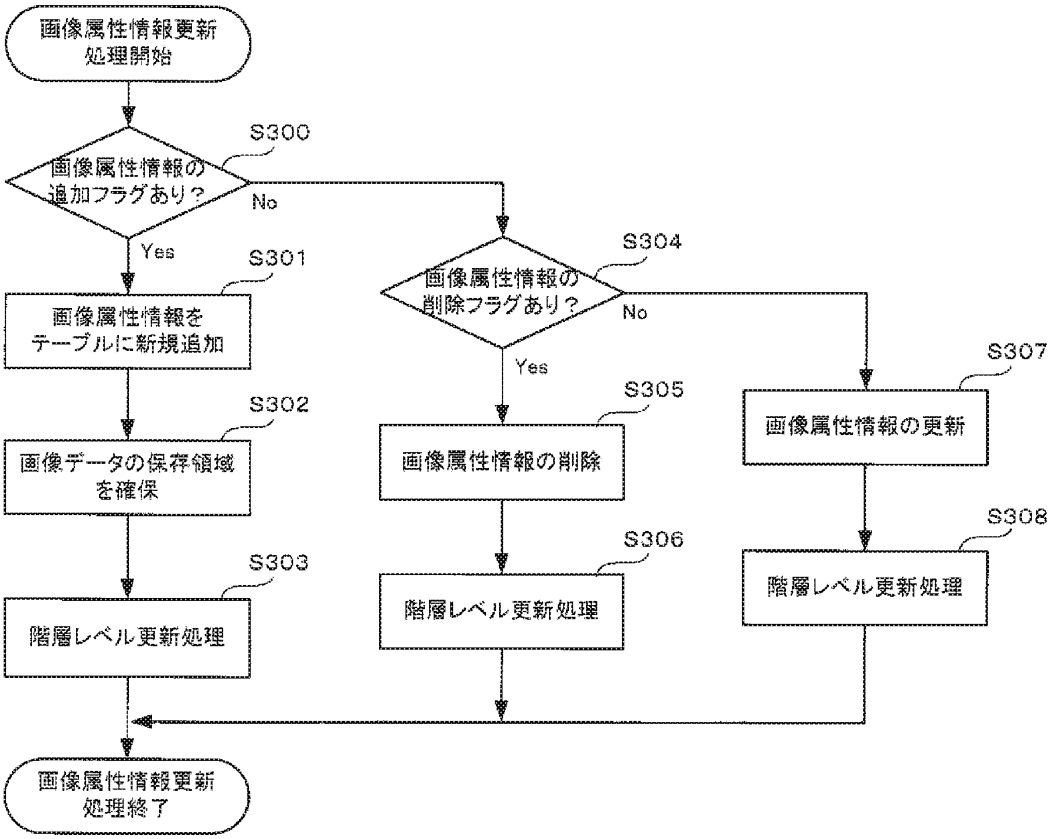
【図14】


画像投影装置
メイン処理開始
S100
接続処理
S110
画像属性情報
受信？
No
Yes
S120
画像属性情報
更新処理
S130
表示領域算出処理
S140
ポインタ情報
受信？
No
Yes
S150
ポインタ情報更新処理
S160
画像投影処理
S170
画像操作情報
を受信？
No
Yes
S180
操作命令
振り分け処理
S190
電源OFF？
No
Yes
画像投影装置
メイン処理終了

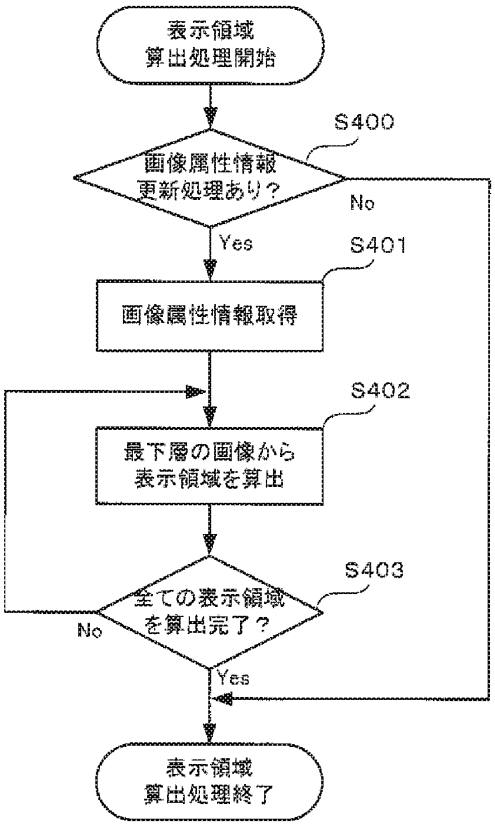
【図15】


接続処理開始
S200
端末装置から
接続要求あり？
No
Yes
S201
解像度の情報
を通知
S202
起動完了
通知あり？
No
Yes
S203
接続情報
管理テーブル更新
S204
ポインタ情報
管理テーブル更新
S205
接続完了通知
接続処理終了

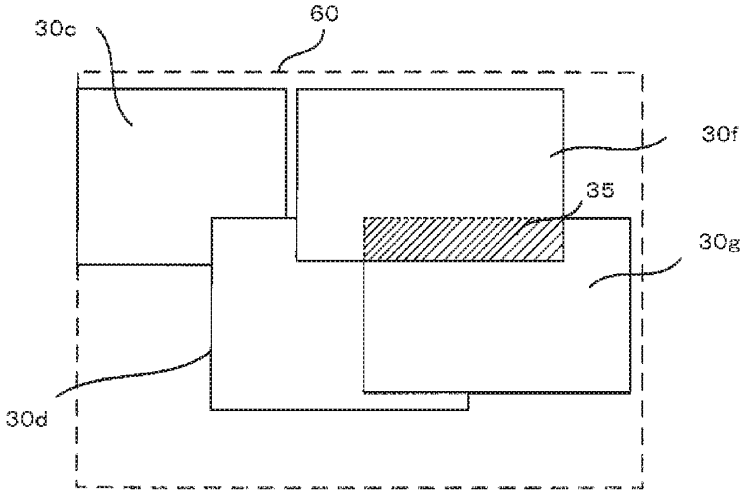
【図16】


画像属性情報更新
処理開始
S300
画像属性情報の
追加フラグあり？
No
Yes
S301
画像属性情報を
テーブルに新規追加
S302
画像データの保存領域
を確保
S303
階層レベル更新処理
S304
画像属性情報の
削除フラグあり？
No
Yes
S305
画像属性情報の削除
S306
階層レベル更新処理
S307
画像属性情報の更新
S308
階層レベル更新処理
画像属性情報更新
処理終了

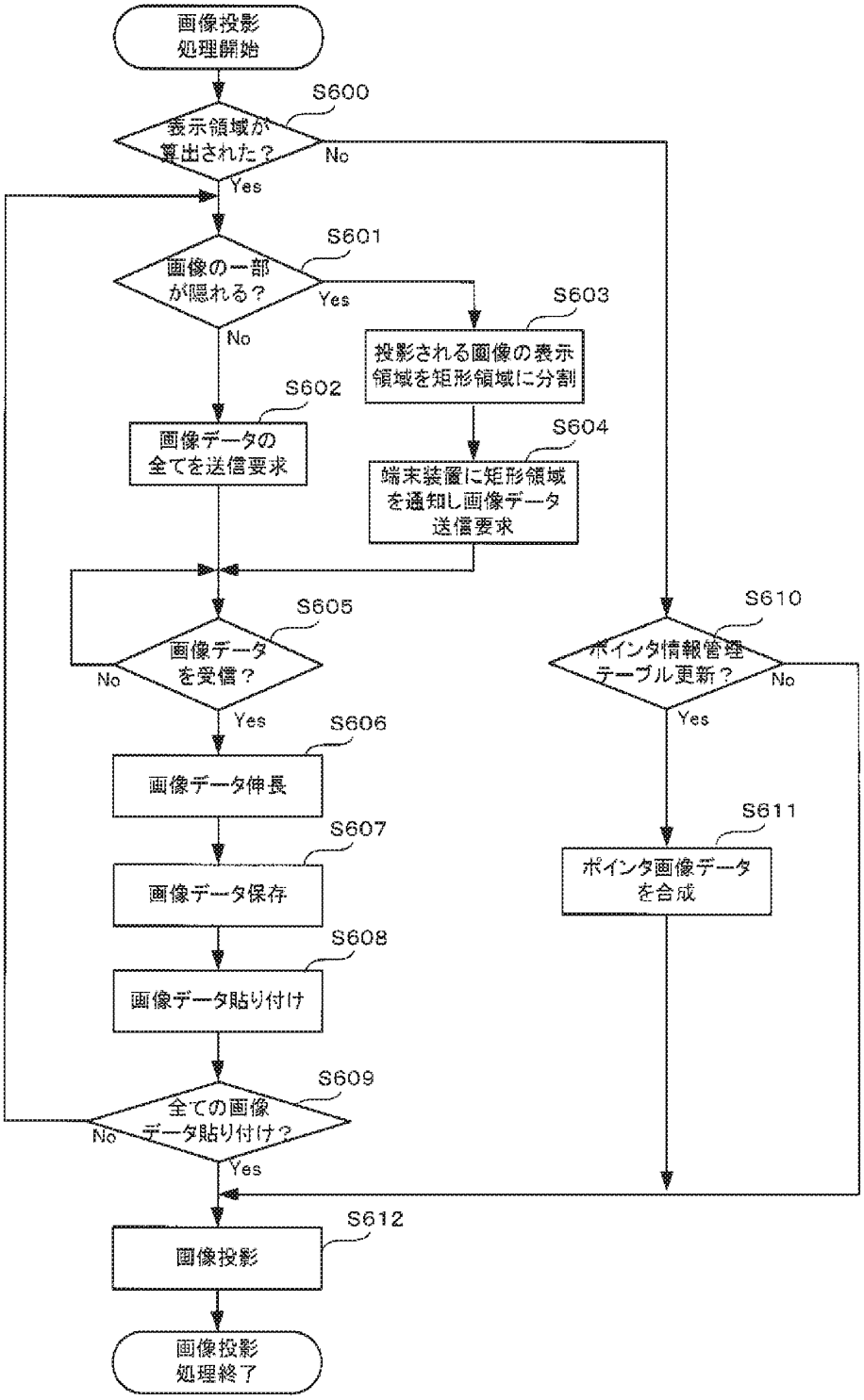
【図17】


表示領域
算出処理開始
S400
画像属性情報
更新処理あり？
No
Yes
S401
画像属性情報取得
S402
最下層の画像から
表示領域を算出
S403
全ての表示領域
を算出完了？
No
Yes
表示領域
算出処理終了

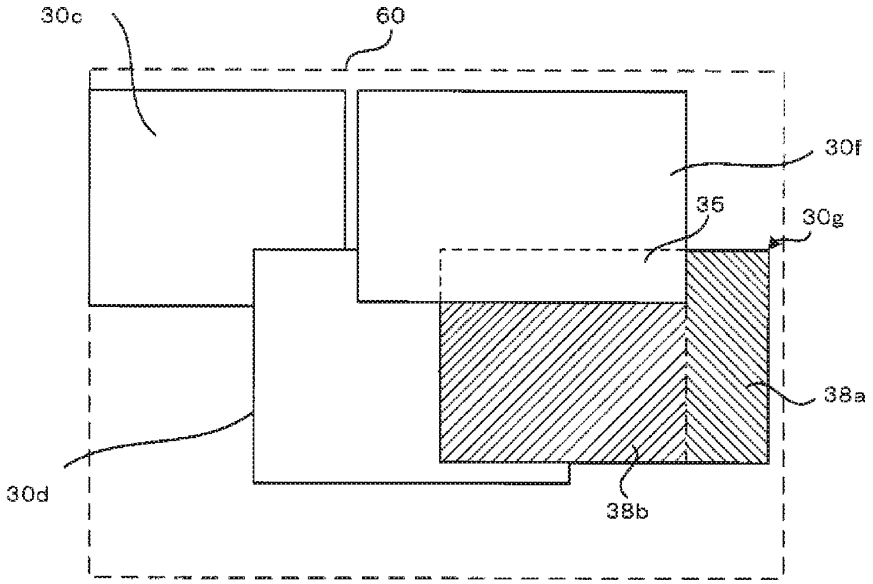
【図18】


30c
60
30f
35
30g
30d

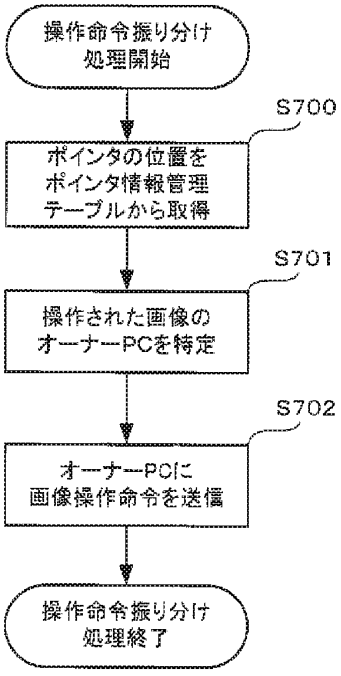
【図19】


画像投影
処理開始
S600
表示領域が
算出された？
No
Yes
S601
画像の一部
が隠れる？
Yes
No
S603
投影される画像の表示
領域を矩形領域に分割
S602
画像データの
全てを送信要求
S604
端末装置に矩形領域
を通知し画像データ
送信要求
S605
画像データ
を受信？
No
Yes
S606
画像データ伸長
S607
画像データ保存
S608
画像データ貼り付け
S609
全ての画像
データ貼り付け？
No
Yes
S610
ポインタ情報管理
テーブル更新？
No
Yes
S611
ポインタ画像データ
を合成
S612
画像投影
画像投影
処理終了

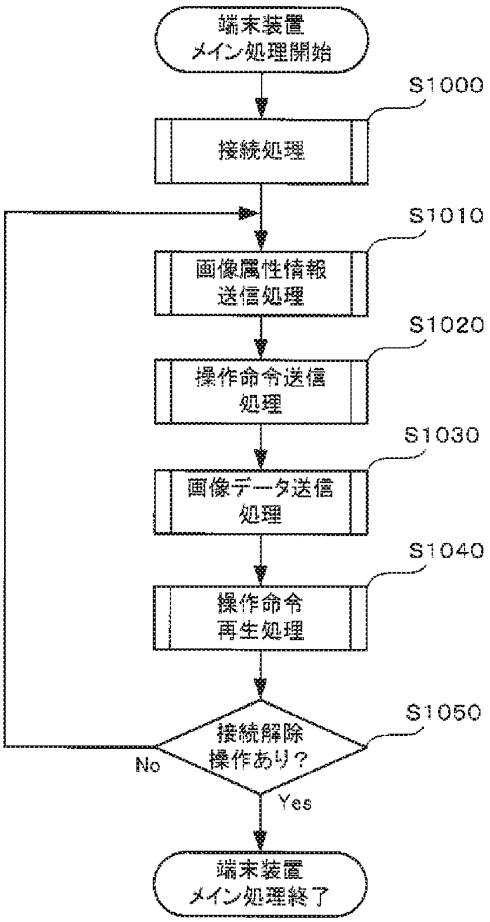
【図20】


30c
60
30f
35
30g
38a
30d
38b

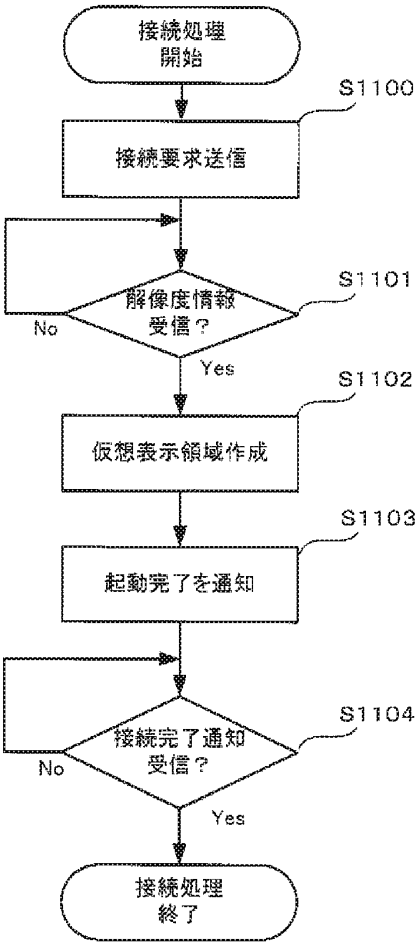
【図21】


操作命令振り分け
処理開始
S700
ポインタの位置を
ポインタ情報管理
テーブルから取得
S701
操作された画像の
オーナーPCを特定
S702
オーナーPCに
画像操作命令を送信
操作命令振り分け
処理終了

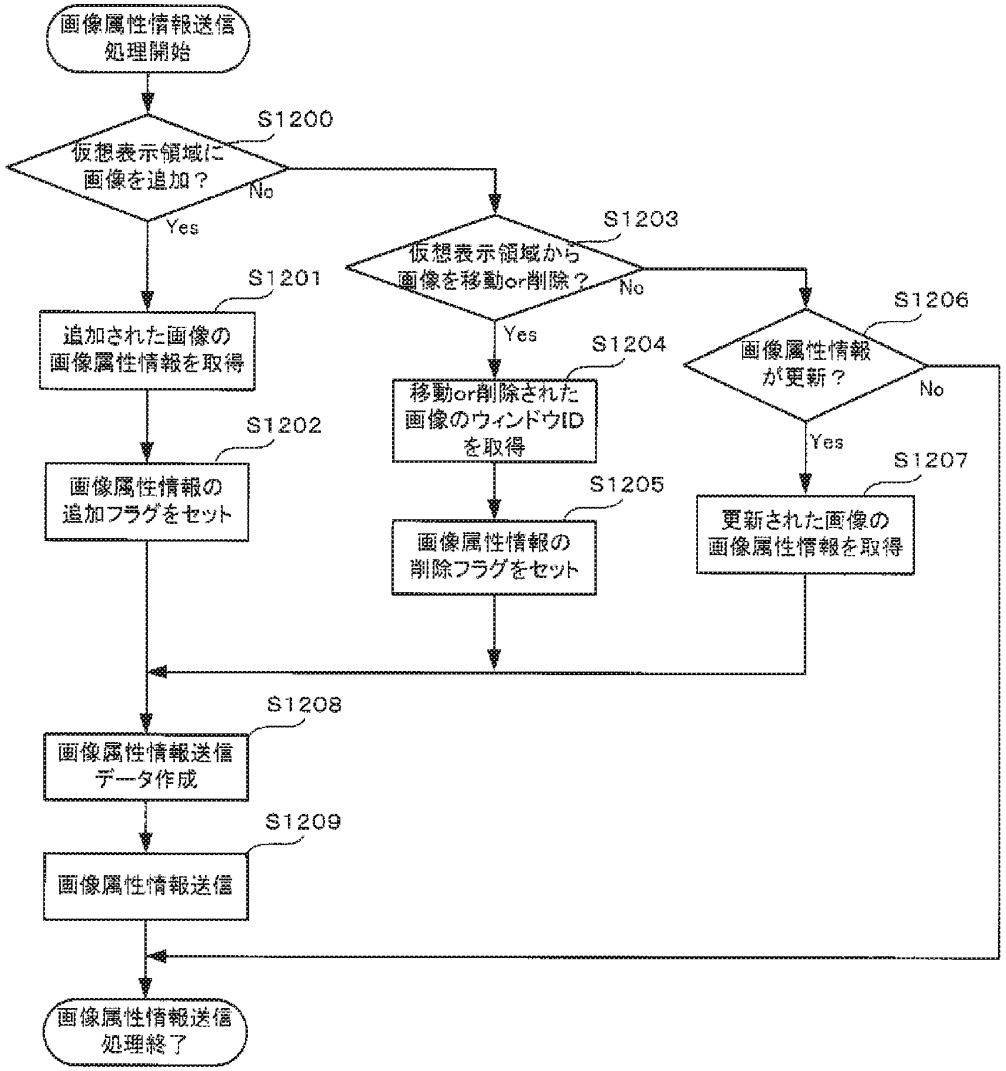
【図22】


端末装置
メイン処理開始
S1000
接続処理
S1010
画像属性情報
送信処理
S1020
操作命令送信
処理
S1030
画像データ送信
処理
S1040
操作命令
再生処理
S1050
接続解除
操作あり？
No
Yes
端末装置
メイン処理終了

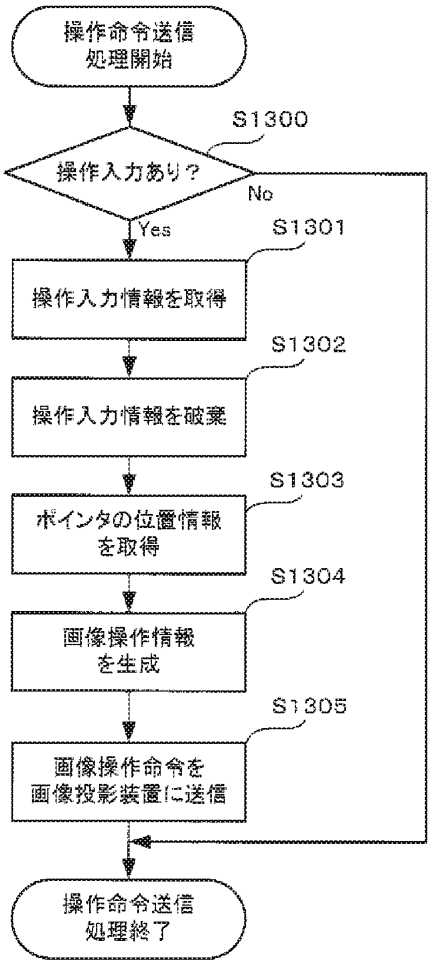
【図23】


接続処理
開始
S1100
接続要求送信
S1101
解像度情報
受信？
No
Yes
S1102
仮想表示領域作成
S1103
起動完了を通知
S1104
接続完了通知
受信？
No
Yes
接続処理
終了

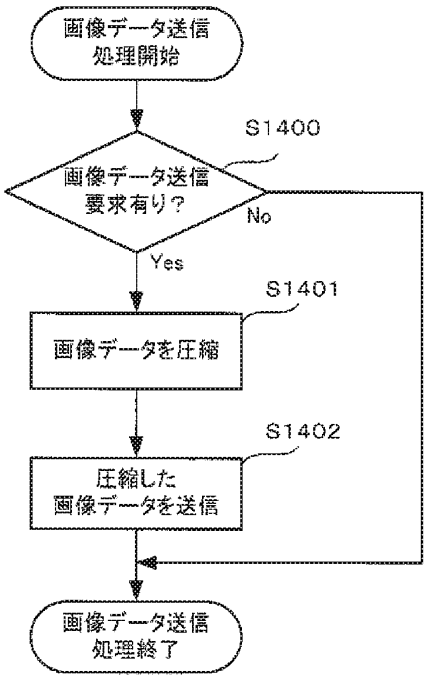
【図24】


画像属性情報送信
処理開始
S1200
仮想表示領域に
画像を追加？
No
Yes
S1203
仮想表示領域から
画像を移動or削除？
No
Yes
S1206
画像属性情報
が更新？
No
Yes
S1201
追加された画像の
画像属性情報を取得
S1204
移動or削除された
画像のウィンドウID
を取得
S1207
更新された画像の
画像属性情報を取得
S1202
画像属性情報の
追加フラグをセット
S1205
画像属性情報の
削除フラグをセット
S1208
画像属性情報送信
データ作成
S1209
画像属性情報送信
画像属性情報送信
処理終了

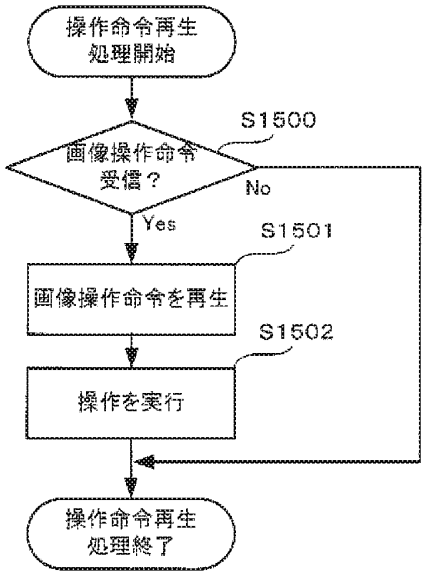
【図25】


操作命令送信
処理開始
S1300
操作入力あり？
No
Yes
S1301
操作入力情報を取得
S1302
操作入力情報を破棄
S1303
ポインタの位置情報
を取得
S1304
画像操作情報
を生成
S1305
画像操作命令を
画像投影装置に送信
操作命令送信
処理終了

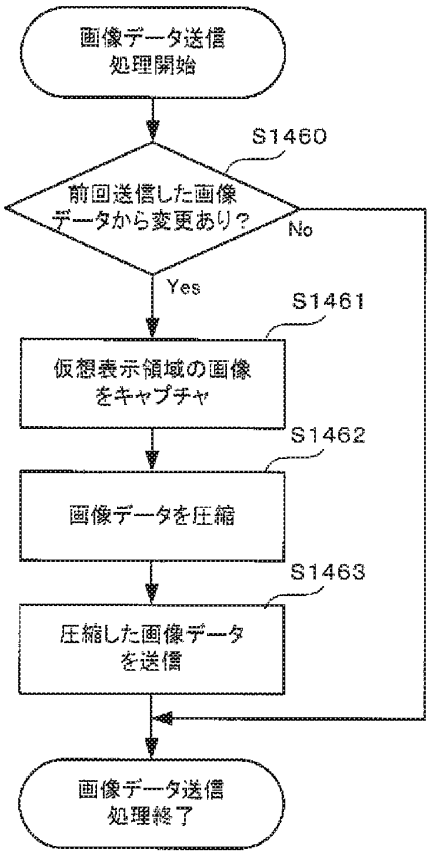
【図26】


画像データ送信
処理開始
S1400
画像データ送信
要求有り？
No
Yes
S1401
画像データを圧縮
S1402
圧縮した
画像データを送信
画像データ送信
処理終了

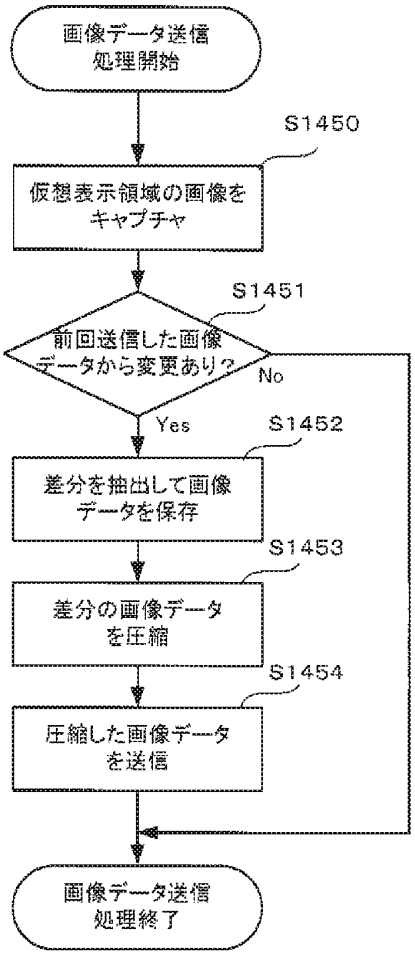
【図27】


操作命令再生
処理開始
S1500
画像操作命令
受信？
No
Yes
S1501
画像操作命令を再生
S1502
操作を実行
操作命令再生
処理終了

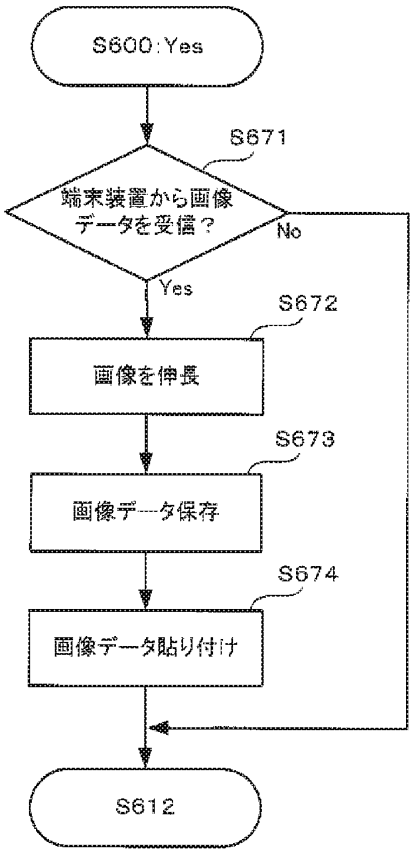
【図28】


画像データ送信
処理開始
S1460
前回送信した画像
データから変更あり？
No
Yes
S1461
仮想表示領域の画像
をキャプチャ
S1462
画像データを圧縮
S1463
圧縮した画像データ
を送信
画像データ送信
処理終了

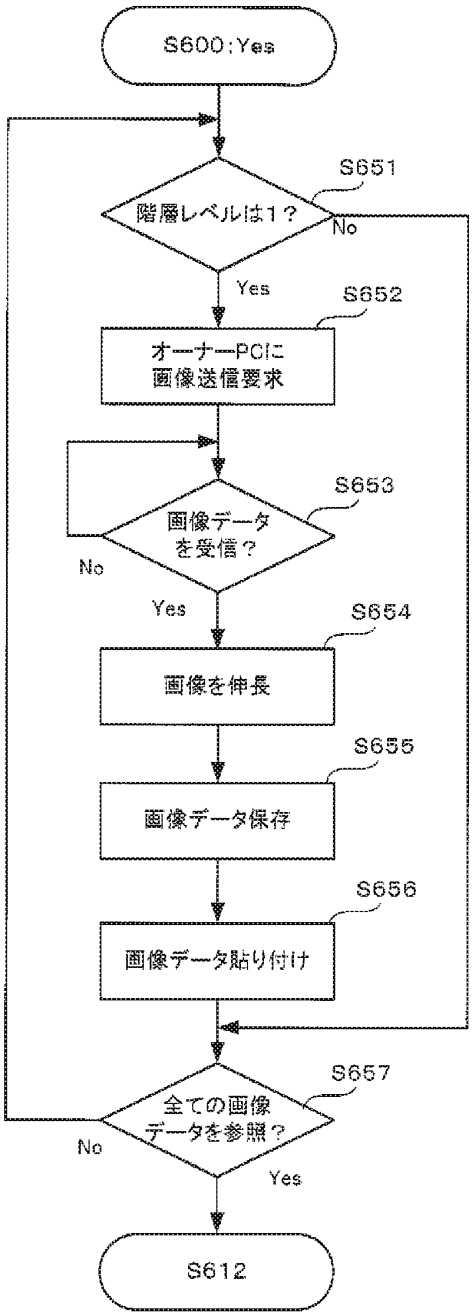
【図29】


画像データ送信
処理開始
S1450
仮想表示領域の画像を
キャプチャ
S1451
前回送信した画像
データから変更あり？
No
Yes
S1452
差分を抽出して画像
データを保存
S1453
差分の画像データ
を圧縮
S1454
圧縮した画像データ
を送信
画像データ送信
処理終了

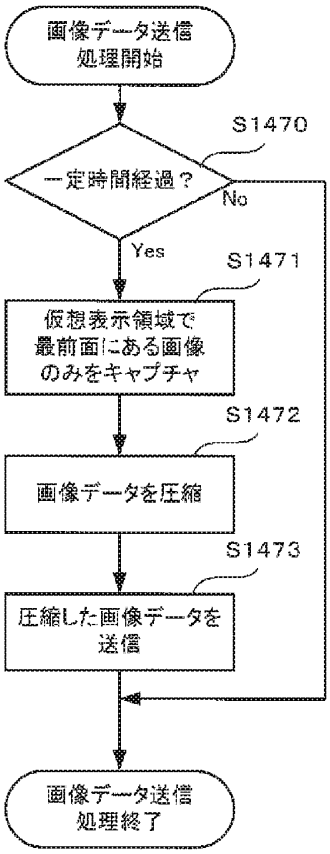
【図30】


S600:Yes
S671
端末装置から画像データを受信？
No
Yes
S672
画像を伸長
S673
画像データ保存
S674
画像データ貼り付け
S612

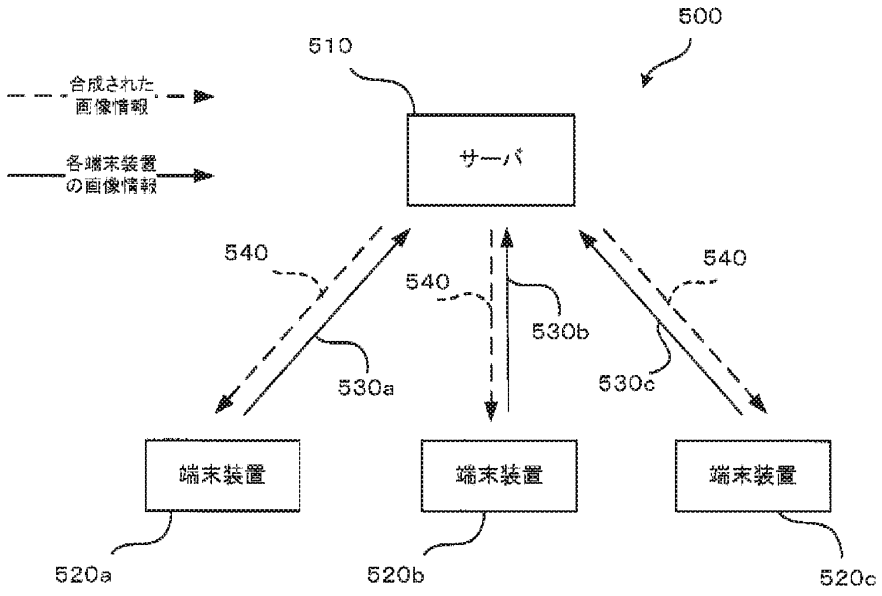
【図31】


S600:Yes
S651
階層レベルは1？
No
Yes
S652
オーナーPCに
画像送信要求
S653
画像データ
を受信？
No
Yes
S654
画像を伸長
S655
画像データ保存
S656
画像データ貼り付け
S657
全ての画像
データを参照？
No
Yes
S612

【図32】


画像データ送信
処理開始
S1470
一定時間経過？
No
Yes
S1471
仮想表示領域で
最前面にある画像
のみをキャプチャ
S1472
画像データを圧縮
S1473
圧縮した画像データを
送信
画像データ送信
処理終了

【図33】


500
510
合成された
画像情報
各端末装置
の画像情報
サーバ
540
540
540
530a
530b
530c
端末装置
端末装置
端末装置
520a
520b
520c

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USB APPLIANCE SYSTEM, DIGITAL PRINTER AND DIGITAL CAMERA

Inventor(s): YOSHIDA SHINICHI; KIRI MANABU; MASUDA HIROSHI; HIRABAYASHI TAKASHI ± (YOSHIDA SHINICHI, ; KIRI MANABU, ; MASUDA HIROSHI, ; HIRABAYASHI TAKASHI)

Applicant(s): EASTMAN KODAK CO ± (EASTMAN KODAK CO)

Classification: **- international:** ***B41J29/38; G06F13/10; G06F13/14; G06F13/38; G06F3/00; G06F3/12; H04N5/225;*** *H04N101/00*

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Abstract of JP2006185359 (A)

PROBLEM TO BE SOLVED: To provide a system allowing proper changeover of USB host appliances 20, 30 performing USB type communication with a USB peripheral appliance 10. ;SOLUTION: In this USB appliance system, the USB peripheral appliance 10 performs the USB type communication with the USB host appliance 20, or the USB peripheral appliance 10 performs the USB type communication with the USB host appliance 30 through the USB host appliance 20. The USB host appliance 20 receives a changeover requirement signal to a host mode from an HUB mode, transmits a changeover permission requirement signal to the USB peripheral appliance 10 through a serial interface circuit 13 according to the changeover requirement signal, receives a changeover permission signal outputted from the USB peripheral appliance 10 through the serial interface circuit 13 according to the changeover permission requirement signal, and transmits a changeover control signal to the host mode from the HUB mode, to a changeover circuit 24 after the reception of the changeover permission signal. ;COPYRIGHT: (C)2006,JPO&NCIPI

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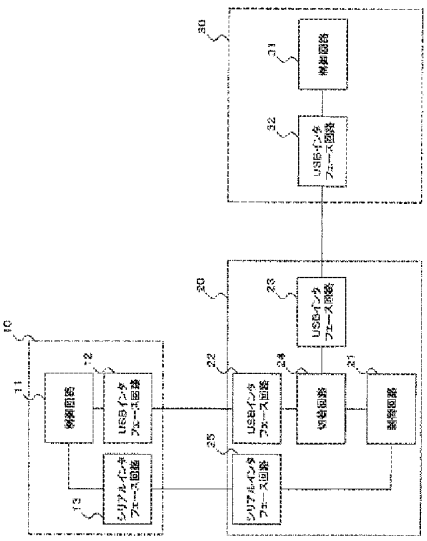
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最終頁に続く

(54)【発明の名称】ＵＳＢ機器システム、デジタルプリンタおよびデジタルカメラ

(57)【要約】
【課題】ＵＳＢ周辺機器１０とＵＳＢ方式通信を行うＵＳＢホスト機器２０，３０を適切に切り替え可能なシステムを提供する。
【解決手段】ＵＳＢ周辺機器１０がＵＳＢホスト機器２０とＵＳＢ方式通信を行うか、もしくはＵＳＢ周辺機器１０がＵＳＢホスト機器２０を中継してＵＳＢホスト機器３０とＵＳＢ方式通信を行うＵＳＢ機器システムにおいて、ＵＳＢホスト機器２０が、ＨＵＢモードからホストモードへの切替要求信号を受信し、切替要求信号に応じて、ＵＳＢ周辺機器１０に対してシリアルインタフェース回路１３を介して切替許可要求信号を送信し、切替許可要求信号に応じてＵＳＢ周辺機器１０から出力された切替許可信号をシリアルインタフェース回路１３を介して受信し、切替許可信号の受信を待って、ＨＵＢモードからホストモードへの切替制御信号を切替回路２４に送信する。
【選択図】図１



【特許請求の範囲】
【請求項1】
ＵＳＢ方式での通信を行うＵＳＢホスト機器において、
ＵＳＢ周辺機器とＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、
前記ＵＳＢ周辺機器とシリアル方式通信するためのシリアルインタフェース回路と、
他のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、
自身がホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行うホストモードと、前記他のＵＳＢホスト機器がホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路および前記第２ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行う際のデータ中継を行うＨＵＢモードとのモード切り替えを行う切替回路と、
前記切替回路のモード切替を制御する制御回路と、
を備え、
前記制御回路は、
前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、
前記切替要求信号に応じて、前記ＵＳＢ周辺機器に対して前記シリアルインタフェース回路を介して切替許可要求信号を送信し、
前記切替許可要求信号に応じて前記ＵＳＢ周辺機器から出力された切替許可信号を前記シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信することを特徴とするＵＳＢホスト機器。
【請求項2】
請求項１に記載のＵＳＢホスト機器において、
前記制御回路は、
前記切替許可要求信号に対する前記切替許可信号を所定期間内に受信しなかった場合、前記ＨＵＢモードから前記ホストモードへの切替を拒否することを特徴とするＵＳＢホスト機器。
【請求項3】
請求項１に記載のＵＳＢホスト機器において、
前記ＵＳＢ周辺機器に備えられた充電式電池への電力供給制御を前記シリアルインタフェース回路を介して行う電力供給制御モジュールを備えることを特徴とするＵＳＢホスト機器。
【請求項4】
請求項１に記載のＵＳＢホスト機器は、
外部ネットワーク上に存在する通信装置と通信する通信回路を備え、
前記切替回路で行う切り替えモードには、前記通信回路を介した前記通信装置と通信する通信モードを含み、
前記制御回路は、前記通信モードから前記ＨＵＢモードへの切り替え、または、前記通信モードから前記ホストモードへの切り替え、または、前記ＨＵＢモードから前記通信モードへの切り替えの際にも、前記ＵＳＢ周辺機器に対して前記シリアルインタフェース回路を介して切替許可要求信号を送信することを特徴とするＵＳＢホスト機器。
【請求項5】
ＵＳＢ方式での通信を行うＵＳＢ周辺機器において、
第１ＵＳＢホスト機器とＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、
前記第１ＵＳＢホスト機器とシリアル方式通信するためのシリアルインタフェース回路と、
前記第１ＵＳＢホスト機器をホストとして前記第１ＵＳＢインタフェース回路を介したＵＳＢ方式通信を制御するか、もしくは前記第１ＵＳＢホスト機器に接続された第２ＵＳＢホスト機器をホストとして、前記第１ＵＳＢホスト機器を中継して前記第１ＵＳＢインタフェース回路を介したＵＳＢ方式通信を制御する制御回路と、

を備え、
前記制御回路は、
前記第１ＵＳＢホスト機器から送信された、前記ＵＳＢ周辺機器と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信から前記ＵＳＢ周辺機器と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切替許可要求信号を、前記シリアルインタフェース回路を介して受信し、
受信した前記切替許可要求信号に応じて、前記ＵＳＢ周辺機器と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を終了してよいかどうかを判定し、
判定の結果、その通信を終了してよいと判定した場合、前記ＵＳＢ周辺機器と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記シリアルインタフェース回路を介して前記第１ＵＳＢホスト機器に対して送信することを特徴とするＵＳＢ周辺機器。
【請求項6】
請求項５に記載のＵＳＢ周辺機器において、
前記制御回路は、
自身と前記第２ＵＳＢホスト機器とが所定期間、所定のＵＳＢ方式通信を行っていない場合に、自身と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を終了してよいとの判定を行うことを特徴とするＵＳＢ周辺機器。
【請求項7】
請求項５に記載のＵＳＢ周辺機器は、
任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路を備え、
前記制御回路は、
前記第１ＵＢＳインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知した場合、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にすることを特徴とするＵＳＢ周辺機器。
【請求項8】
請求項５に記載のＵＳＢ周辺機器は、
任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路を備え、
前記制御回路は、
前記第１ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続をＶｂｕｓ信号に基づいて検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続をＶｂｕｓ信号に基づいて検知した場合、ＵＳＢ通信でのデータ端子となるＤ＋端子またはＤ－端子のプルアップを解除することで、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にすることを特徴とするＵＳＢ周辺機器。
【請求項9】
ＵＳＢ周辺機器が第１ＵＳＢホスト機器とＵＳＢ方式通信を行うか、もしくは前記ＵＳＢ周辺機器が前記第１ＵＳＢ機器を中継して第２ＵＳＢホストとＵＳＢ方式通信を行うＵＳＢ機器システムにおいて、
前記第１ＵＳＢホスト機器は、
前記ＵＳＢ周辺機器とＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、
前記ＵＳＢ周辺機器とシリアル方式通信するための第１シリアルインタフェース回路と、
前記第２ＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、
自身がＵＳＢホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行うホストモードと、前記第２ＵＳＢホスト機器がＵＳＢホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路および前記第２ＵＳＢイ

ンタフェース回路を介してＵＳＢ方式通信を行う際のデータ中継を行うＨＵＢモードとのモード切り替えを行う切替回路と、
前記切替回路のモード切替を制御する第１制御回路と、
を備え、
前記第１制御回路は、
前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、
前記切替要求信号に応じて、前記ＵＳＢ周辺機器に対して前記第１シリアルインタフェース回路を介して切替許可要求信号を送信し、
前記切替許可要求信号に応じて前記ＵＳＢ周辺機器から出力された切替許可信号を前記第１シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信し、
前記ＵＳＢ周辺機器は、
第１ＵＳＢホスト機器とＵＳＢ方式通信するための第３ＵＳＢインタフェース回路と、
第１ＵＳＢホスト機器とシリアル方式通信するための第２シリアルインタフェース回路と、
前記第１ＵＳＢホスト機器をホストとして前記第３ＵＳＢインタフェース回路を介した前記第１ＵＳＢホスト機器とのＵＳＢ方式通信を制御するか、もしくは前記第２ＵＳＢホスト機器をホストとして、前記第１ＵＳＢホスト機器を中継して前記第３ＵＳＢインタフェース回路を介した前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を制御する第２制御回路と、
を備え、
前記第２制御回路は、
前記第１ＵＳＢホスト機器から送信された前記切替許可要求信号を、前記第２シリアルインタフェース回路を介して受信し、
受信した前記切替許可要求信号に応じて、自身と前記第２ＵＳＢホスト機器との前記第３ＵＳＢインタフェース回路を介したＵＳＢ方式通信を終了してよいかどうかを判定し、
判定の結果、その通信を終了してよいと判定した場合、自身と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記第２シリアルインタフェース回路を介して前記第１ＵＳＢホスト機器に対して送信する、
ことを特徴とするＵＳＢ機器システム。
【請求項10】
デジタルカメラと、前記デジタルカメラとＵＳＢ方式通信を行い前記デジタルカメラに記憶された画像データに基づいて印刷処理を行う印刷処理モジュールと前記デジタルカメラに備えられた充電式電池への電力供給を制御する充電制御モジュールとを備えたデジタルプリンタと、前記デジタルプリンタを中継して前記デジタルカメラとＵＳＢ方式通信を行うコンピュータとを含むＵＳＢ機器システムにおいて、
前記デジタルプリンタは、
前記デジタルカメラとＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、
前記デジタルカメラとシリアル方式通信するための第１シリアルインタフェース回路と、
前記コンピュータとＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、
自身がＵＳＢホストとして前記デジタルカメラと前記第１ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行い、印刷処理を行うホストモードと、前記ＵＳＢホスト機器がＵＳＢホストとして前記デジタルカメラと前記第１ＵＳＢインタフェース回路および前記第２ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行う際のデータ中継を行うＨＵＢモードとのモード切り替えを行う切替回路と、
前記切替回路のモード切替を制御する第１制御回路と、
を備え、
前記第１制御回路は、
前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、

前記切替要求信号に応じて、前記デジタルカメラに対して前記第１シリアルインタフェース回路を介して切替許可要求信号を送信し、

前記切替許可要求信号に応じて前記デジタルカメラから出力された切替許可信号を前記第１シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信し、

前記デジタルカメラは、

前記デジタルプリンタと通信するための第３ＵＳＢインタフェース回路と、

前記デジタルプリンタと通信するための第２シリアルインタフェース回路と、

前記デジタルプリンタをホストとした場合、前記第３ＵＳＢインタフェース回路を介した前記デジタルプリンタとのＵＳＢ方式通信を制御し、さらに前記コンピュータをホストとした場合、前記デジタルプリンタを中継して前記第３ＵＳＢインタフェース回路を介した前記コンピュータとのＵＳＢ方式通信を制御する第２制御回路と、

を備え、

前記第２制御回路は、

前記デジタルプリンタから送信された前記切替許可要求信号を、前記第２シリアルインタフェース回路を介して受信し、

受信した前記切替許可要求信号に応じて、自身と前記コンピュータとの前記第３ＵＳＢインタフェース回路を介したＵＳＢ方式通信を終了してよいかどうかを判定し、

判定の結果、その通信を終了してよいと判定した場合、自身と前記デジタルプリンタとのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記第２シリアルインタフェース回路を介して前記デジタルプリンタに対して送信する、

ことを特徴とするＵＳＢ機器システム。

【請求項11】

請求項１０に記載のＵＳＢ機器システムにおいて、

前記充電制御モジュールによる前記デジタルカメラに備えられた充電式電池への電力供給制御は、前記第１及び第２シリアルインタフェース回路を介して行われることを特徴とするＵＳＢ機器システム。

【請求項12】

ＵＳＢ方式通信を行うデジタルプリンタにおいて、

デジタルカメラとＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、

前記デジタルカメラとシリアル方式通信するためのシリアルインタフェース回路と、

他のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、

自身がホストとして前記デジタルカメラと前記第１インタフェース回路を介してＵＳＢ方式通信を行い、デジタルカメラに記憶された画像データに基づく印刷処理を実行するホストモードと、前記他のＵＳＢホスト機器がホストとして前記デジタルカメラと前記第１ＵＳＢインタフェース回路および前記第２ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行う際のデータ中継を行うＨＵＢモードとのモード切り替えを行う切替回路と、

前記切替回路のモード切替を制御する制御回路と、

を備え、

前記制御回路は、

前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、

前記切替要求信号に応じて、前記デジタルカメラに対して前記シリアルインタフェース回路を介して切替許可要求信号を送信し、

前記切替許可要求信号に応じて前記デジタルカメラから出力された切替許可信号を前記シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信することを特徴とするデジタルプリンタ。

【請求項13】

請求項１２に記載のデジタルプリンタにおいて、

前記制御回路は、

前記切替許可要求信号に対する前記切替許可信号を所定期間に受信しなかった場合、前

記ＨＵＢモードから前記ホストモードへの切替を拒否することを特徴とするデジタルプリンタ。

【請求項14】

請求項１２に記載のデジタルプリンタは、

前記デジタルカメラに備えられた充電式電池への電力供給制御を前記シリアルインタフェース回路を介して行う電力供給制御モジュールを備えることを特徴とするデジタルプリンタ。

【請求項15】

請求項１２に記載のデジタルプリンタは、

外部ネットワーク上に存在する通信装置と通信する通信回路を備え、

前記切替回路で行う切り替えモードには、前記通信回路を介した前記通信装置と通信する通信モードを含み、

前記制御回路は、前記通信モードから前記ＨＵＢモードへの切り替え、または、前記通信モードから前記ホストモードへの切り替え、または、前記ＨＵＢモードから前記通信モードへの切り替えの際にも、前記デジタルカメラに対して前記シリアルインタフェース回路を介して切替許可要求信号を送信することを特徴とするデジタルプリンタ。

【請求項16】

ＵＳＢ方式通信を行うデジタルカメラにおいて、

デジタルプリンタとＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、

前記デジタルプリンタとシリアル方式通信するためのシリアルインタフェース回路と、

前記デジタルプリンタをホストとして前記第１ＵＳＢインタフェース回路を介したＵＳＢ方式通信を制御し、前記デジタルプリンタに自身が記憶する画像データの印刷処理を実行させるか、もしくは前記デジタルプリンタに接続されたコンピュータをホストとして、前記デジタルプリンタを中継した前記第１ＵＳＢインタフェース回路を介してのＵＳＢ方式通信を制御する制御回路と、

を備え、

前記制御回路は、

前記デジタルプリンタから送信された、自身と前記コンピュータとのＵＳＢ方式通信から自身と前記デジタルプリンタとのＵＳＢ方式通信への切替許可要求信号を、前記シリアルインタフェース回路を介して受信し、

受信した前記切替許可要求信号に応じて、自身と前記コンピュータとのＵＳＢ方式通信を終了してよいかどうかを判定し、

判定の結果、自身と前記コンピュータとのＵＳＢ方式通信を終了してよいと判定した場合、自身と前記デジタルプリンタとのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記シリアルインタフェース回路を介して前記デジタルプリンタに対して送信することを特徴とするデジタルカメラ。

【請求項17】

請求項１６に記載のデジタルカメラにおいて、

前記制御回路は、

自身と前記コンピュータとが所定期間、所定のＵＳＢ方式通信を行っていない場合に、自身と前記コンピュータとのＵＳＢ方式通信を終了してよいとの判定を行うことを特徴とするデジタルカメラ。

【請求項18】

請求項１６に記載のデジタルカメラは、

任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路を備え、

前記制御回路は、

前記第１ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知した場合、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続

状態を、それぞれ実質的に非接続状態にすることを特徴とするデジタルカメラ。
【請求項19】
請求項１６に記載のデジタルカメラは、
任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路を備え、
前記制御回路は、
前記第１ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続をＶｂｕｓ信号に基づいて検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続をＶｂｕｓ信号に基づいて検知した場合、ＵＳＢ通信でのデータ端子となるＤ＋端子またはＤ－端子のプルアップを解除することで、各インタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にすることを特徴とするデジタルカメラ。
【請求項20】
請求項１６に記載のデジタルカメラは、
任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、
画像を表示するディスプレイと、
を備え、
前記制御回路は、
前記第１ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知した場合、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にし、さらに前記ディスプレイにエラーメッセージを表示することを特徴とするデジタルカメラ。

【発明の詳細な説明】
【技術分野】
【0001】
本発明は、ＵＳＢ周辺機器が第１ＵＳＢホスト機器とＵＳＢ方式通信を行うか、もしくはＵＳＢ周辺機器が第１ＵＳＢ機器を中継して第２ＵＳＢホストとＵＳＢ方式通信を行うＵＳＢ機器システムに関する。
【背景技術】
【0002】
機器同士のシリアル接続の規格として、ＵＳＢ（Ｕｎｉｖｅｒｓａｌ　Ｓｅｒｉａｌ　Ｂｕｓ）が知られている。ＵＳＢホスト機器とＵＳＢ周辺機器とは、このＵＳＢ規格に基づいて一対一または１つのホストに対しＨＵＢを経由した複数の周辺機器との通信を行う。
【0003】
特許文献１には、ホストと周辺機器をＵＳＢ方式により接続する周辺機器制御システムにおいて、ホストがディスクリプタ切り替え要求ベンダリクエストをファンクションに発行し、切り替え可能であれば、利用するデバイス機能を切り替える技術が開示されている。
【0004】
ところで、ＵＳＢ規格に基づいたシステムとして、１台のＵＳＢ周辺機器に対して使用するＵＳＢホスト機器を適宜切り替えるシステムが存在する。
【0005】
このようなシステムでは、例えば、ＵＳＢ周辺機器に第１ＵＳＢホスト機器が接続される。そしてこの第１ＵＳＢホスト機器には、さらに第２ＵＳＢホスト機器が接続される。このような接続形態において、ＵＳＢ周辺機器は、第１ＵＳＢホスト機器をホストとしてＵＳＢ方式通信を行うか、もしくは第２ＵＳＢホスト機器をホストとして、第１ＵＳＢホスト機器を介してＵＳＢ方式通信を行う。つまり、第１ＵＳＢホスト機器は、ＵＳＢ周辺

機器に対してホストとして機能するか、もしくは単なるデータ中継を行うＨＵＢとして機能する。

【0006】

このようなＵＳＢ機器システムにおいて、例えば、ＵＳＢ周辺機器と第２ＵＳＢホスト機器とが第１ＵＳＢホスト機器を介してＵＳＢ方式で通信中に、第１ＵＳＢホスト機器をホストとしたＵＳＢ周辺機器とのＵＳＢ方式通信に切り替える際に、ＵＳＢ周辺機器と第２ＵＳＢホスト機器との通信が途中で中断され、ＵＳＢ周辺機器と第２ＵＳＢホスト機器と間でやり取りされるデータが破壊されるなどの不具合を生じることがある。

【0007】

【特許文献1】特開２００１－２２２５０３号公報

【特許文献2】特開２００４－１２７１６６号公報

【特許文献3】特表２００２－５１６５３４号公報

【発明の開示】

【発明が解決しようとする課題】

【0008】

本発明は、ＵＳＢ周辺機器とＵＳＢ方式通信を行うＵＳＢホスト機器を適切に切り替え可能なシステムを提供することを目的とする。

【課題を解決するための手段】

【0009】

本発明に係るＵＳＢホスト機器は、ＵＳＢ方式での通信を行うＵＳＢホスト機器において、ＵＳＢ周辺機器とＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、前記ＵＳＢ周辺機器とシリアル方式通信するためのシリアルインタフェース回路と、他のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路と、自身がホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行うホストモードと、前記他のＵＳＢホスト機器がホストとして前記ＵＳＢ周辺機器と前記第１ＵＳＢインタフェース回路および前記第２ＵＳＢインタフェース回路を介してＵＳＢ方式通信を行う際のデータ中継を行うＨＵＢモードとのモード切り替えを行う切替回路と、前記切替回路のモード切替を制御する制御回路と、を備え、前記制御回路は、前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、前記切替要求信号に応じて、前記ＵＳＢ周辺機器に対して前記シリアルインタフェース回路を介して切替許可要求信号を送信し、前記切替許可要求信号に応じて前記ＵＳＢ周辺機器から出力された切替許可信号を前記シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信することを特徴とする。

【0010】

本発明によれば、制御回路が、前記ＨＵＢモードから前記ホストモードへの切替要求信号を受信し、前記切替要求信号に応じて、前記ＵＳＢ周辺機器に対して前記シリアルインタフェース回路を介して切替許可要求信号を送信し、前記切替許可要求信号に応じて前記ＵＳＢ周辺機器から出力された切替許可信号を前記シリアルインタフェース回路を介して受信した場合、前記ＨＵＢモードから前記ホストモードへの切替制御信号を前記切替回路に送信する。これにより、ＨＵＢモードからホストモードへの切り替えが、ＵＳＢ周辺機器から送信された切替許可信号を受信するまで行われない。よって、例えば、ＵＳＢホスト機器が、ＨＵＢモードとして動作している際に、強制的にホストモードに切り替えることで、ＵＳＢ周辺機器と他のＵＳＢホスト機器との通信が途中で切断され、ＵＳＢ周辺機器と他のＵＳＢホスト機器と間でやり取りされていたデータの破壊等の不具合が生じることを防止することができる。

【0011】

また、本発明に係るＵＳＢホスト機器の１つの態様によれば、前記ＵＳＢ周辺機器に備えられた充電式電池への電力供給制御を前記シリアルインタフェース回路を介して行う電力供給制御モジュールを備えることを特徴とする。

【0012】

本発明によれば、切替許可要求信号や切替許可信号をＵＳＢ周辺機器から受信するインタフェース回路と、ＵＳＢ周辺機器に備えられた充電式電池への電力供給制御を行う際に使用するインタフェース回路とを、シリアルインタフェース回路１つにより併用することができる。よって、ＵＳＢホスト機器は、切替許可要求信号や切替許可信号をＵＳＢ周辺機器から受信するインタフェース回路と、ＵＳＢ周辺機器に備えられた充電式電池への電力供給制御を行う際に使用するインタフェース回路とを別々に備える必要がなく、製造コストの低減を図ることができる。

【0013】

本発明に係るＵＳＢ周辺機器は、ＵＳＢ方式での通信を行うＵＳＢ周辺機器において、第１ＵＳＢホスト機器とＵＳＢ方式通信するための第１ＵＳＢインタフェース回路と、前記第１ＵＳＢホスト機器とシリアル方式通信するためのシリアルインタフェース回路と、前記第１ＵＳＢホスト機器をホストとして前記第１ＵＳＢインタフェース回路を介したＵＳＢ方式通信を制御するか、もしくは前記第１ＵＳＢホスト機器に接続された第２ＵＳＢホスト機器をホストとして、前記第１ＵＳＢホスト機器を中継して前記第１ＵＳＢインタフェース回路を介したＵＳＢ方式通信を制御する制御回路と、を備え、前記制御回路は、前記第１ＵＳＢホスト機器から送信された、前記ＵＳＢ周辺機器と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信から前記ＵＳＢ周辺機器と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切替許可要求信号を、前記シリアルインタフェース回路を介して受信し、受信した前記切替許可要求信号に応じて、前記ＵＳＢ周辺機器と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を終了してよいかどうかを判定し、判定の結果、その通信を終了してよいと判定した場合、前記ＵＳＢ周辺機器と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記シリアルインタフェース回路を介して前記第１ＵＳＢホスト機器に対して送信することを特徴とする。

【0014】

本発明によれば、制御回路は、前記第１ＵＳＢホスト機器から送信された、自身と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信から自身と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切替許可要求信号を、前記シリアルインタフェース回路を介して受信し、受信した前記切替許可要求信号に応じて、自身と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を終了してよいかどうかを判定し、判定の結果、自身と前記第２ＵＳＢホスト機器とのＵＳＢ方式通信を終了してよいと判定した場合、自身と前記第１ＵＳＢホスト機器とのＵＳＢ方式通信への切り替え許可を示す切替許可信号を前記シリアルインタフェース回路を介して前記第１ＵＳＢホスト機器に対して送信する。これにより、ＵＳＢ周辺機器が、第１ＵＳＢホスト機器を介して、第２ＵＳＢホスト機器をホストとしてＵＳＢ方式通信を行っている最中に、第１ＵＳＢホスト機器が強制的に自身をホストとして、ＵＳＢ周辺機器とのＵＳＢ方式通信に切り替えてしまうことを拒否できるため、ＵＳＢ周辺機器と第２ＵＳＢホスト機器と間でやり取りされていたデータの破壊等の不具合が生じることを防止することができる。

【0015】

本発明に係るＵＳＢ周辺機器の１つの態様では、任意のＵＳＢホスト機器とＵＳＢ方式通信するための第２ＵＳＢインタフェース回路を備え、前記制御回路は、前記第１ＵＢＳインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知した場合、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にすることを特徴とする。

【0016】

本発明によれば、制御回路が、前記第１ＵＢＳインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知し、かつ、前記第２ＵＳＢインタフェース回路を介して任意のＵＳＢホスト機器の接続を検知した場合、各ＵＳＢインタフェース回路を介して接続された各ＵＳＢホスト機器との接続状態を、それぞれ実質的に非接続状態にする。これにより、ＵＳＢ周辺機器に備えられた第１ＵＳＢインタフェース回路および第２ＵＳＢインタフ

ェース回路を介して、それぞれＵＳＢホストが同時に接続されたとしても、各ＵＳＢホストとはＵＳＢ方式通信が行われないため、データ信号のコンフリクト等の不具合を防止することができる。

【発明を実施するための最良の形態】

【0017】

以下、本発明の実施の形態を図面に従って説明する。

【0018】

［第１の実施の形態］

図１は、第１の実施の形態に係るＵＳＢ機器システムの全体構成を示すブロック図である。ＵＳＢ周辺機器１０は、ＵＳＢ規格に基づいてＵＳＢホスト機器２０，３０とＵＳＢ方式で通信を行う機器である。ＵＳＢホスト機器２０は、ＵＳＢ規格に基づいてホストとして機能し、ＵＳＢ周辺機器１０とＵＳＢ方式で通信を行う機器であり、いわゆるＨＵＢ機能も有し、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０とのＵＳＢ方式の通信を中継する。ＵＳＢホスト機器３０は、ＵＳＢ規格に基づいてホストとして機能し、ＵＳＢ周辺機器１０とＵＳＢ方式で通信を行う機器である。このように構成されたＵＳＢ機器システムにより、ＵＳＢ周辺機器１０は、ＵＳＢホスト機器２０をホストとして、ＵＳＢ方式で通信を行うか、もしくは、ＵＳＢホスト機器２０を中継して、ＵＳＢホスト機器３０とＵＳＢ方式で通信を行う。

【0019】

ここで、各機器について詳しく説明する。まず、ＵＳＢ周辺機器１０は、ＵＳＢ周辺機器１０の動作全体の制御を行う制御回路１１と、外部とＵＳＢ方式での通信を行うための通信インタフェースであるＵＳＢインタフェース回路１２とを備える。さらに、ＵＳＢ周辺機器１０は、ＵＳＢインタフェース回路１２の他に、ＵＳＢホスト機器２０と所定のシリアル方式で通信を行うための通信インタフェースであるシリアルインタフェース回路１３を備える。このように、ＵＳＢインタフェース回路１２の他にシリアルインタフェース回路１３を備えることで、本実施形態では、ＵＳＢ周辺機器１０が、ＵＳＢインタフェース回路１２を介して、ＵＳＢホスト機器３０とＵＳＢ方式で一対一の通信を行っている最中に、シリアルインタフェース回路１３を介して、ＵＳＢホスト機器２０と１対１の通信をすることができる。

【0020】

また、ＵＳＢホスト機器２０は、動作全体の制御を行う制御回路２１と、ＵＳＢ周辺機器１０とＵＳＢ方式で通信を行うための通信インタフェースであるＵＳＢインタフェース回路２２と、ＵＳＢホスト機器３０とＵＳＢ方式で通信するための通信インタフェースであるＵＳＢインタフェース回路２３と、を備える。ＵＳＢホスト機器２０は、ＵＳＢインタフェース回路２２，２３を介して、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との通信を中継する。さらに、ＵＳＢホスト機器２０は、ＵＳＢインタフェース回路２２の他に、ＵＳＢ周辺機器１０と所定のシリアル方式で通信を行う際の通信インタフェースとなるシリアルインタフェース回路２５を備える。加えて、ＵＳＢホスト機器２０は、切替回路２４を備える。この切替回路２４を制御回路２１により制御することで、ＵＳＢ周辺機器１０とＵＳＢ方式でＵＳＢインタフェース回路２２を介して通信するホストモードと、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との通信の中継を行うＨＵＢモードとの切り換えが行われる。

【0021】

ＵＳＢホスト機器３０は、動作全体の制御を行う制御回路３１と、ＵＳＢ周辺機器１０とＵＳＢ方式で通信を行う際の通信インタフェースとなるＵＳＢインタフェース回路３２とを備える。

【0022】

本実施形態では、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との通信の中継を行うＨＵＢモードから、ＵＳＢ周辺機器１０とＵＳＢ方式でＵＳＢインタフェース回路２２を介して通信するホストモードへの切り替えを、ＵＳＢホスト機器２０が行う際に、シリアル

インタフェース回路２５を介してＵＳＢ周辺機器１０と通信を行い、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との通信状態を確認した後に、切替回路２４を制御してモード切り換えを行う。これにより、ＵＳＢ周辺機器とＵＳＢ方式通信を行うＵＳＢホスト機器を適切に切り替える。

【0023】

ここで、モード切り換えにおけるＵＳＢホスト機器２０の動作について、図２を用いて説明する。図２は、ＵＳＢホスト機器２０の制御回路２１のモード切り換えの際の動作を示すフローチャートである。

【0024】

まず、制御回路２１は、モード切替信号を受信する（Ｓ１０１）。このモード切替信号は、例えば、ＵＳＢホスト機器２０に備えられたユーザインタフェース（図示せず）を介して、ユーザの要求により制御回路２１に送信される。制御回路２１は、モード切替信号を受信すると、切替回路２４のモードがホストモードかＨＵＢモードかを確認する（Ｓ１０２）。ホストモードの場合は、ＵＳＢホスト機器２０自身がホストとして、ＵＳＢ周辺機器１０とＵＳＢ方式で通信を行っているため、制御回路２１は、ＵＳＢ周辺機器１０と現在通信中か否かの判定を直接行うことができる。そこで、Ｓ１０２での確認の結果、ホストモードの場合には、制御回路２１は、ＵＳＢ周辺機器１０と現在通信中か否かの判定を行い（Ｓ１０３）、通信中でなければ、切替制御信号を切替回路２４に送信する（Ｓ１０４）。一方、Ｓ１０２での確認の結果、ＵＳＢ周辺機器１０と現在通信中であれば、モード切替を拒否する（Ｓ１０５）。

【0025】

Ｓ１０２における確認の結果、ＨＵＢモードの場合は、ＵＳＢホスト機器２０は単なるＨＵＢとして機能しているため、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０とが現在通信中か否かを直接確認することができない。そこで、本実施形態では、ＵＳＢ周辺機器１０に対して、モードの切り替えを行ってよいかどうかを確認する。

【0026】

しかしながら、ＵＳＢインタフェース回路２２は、すでにＵＳＢ周辺機器１０とＵＳＢホスト機器３０との１対１の通信で使用されているため、この状態では、ＵＳＢの規格上、ＵＳＢ周辺機器１０と通信する際にＵＳＢインタフェース回路２２を使用することができない。そこで、本実施形態では、制御回路２１は、シリアルインタフェース回路２５を介して、ＵＳＢ周辺機器１０に対してモードの切り替えを行ってよいかどうかを確認するために、ＵＳＢ周辺機器１０に対して切替許可要求信号を送信する（Ｓ１０６）。その後、ＵＳＢ周辺機器１０から切替許可要求信号に対する応答として、切替許可信号を受信したか否かを判定して（Ｓ１０７）、切替許可信号を受信した場合には、切替制御信号を切替回路２４に送信する（Ｓ１０８）。一方、Ｓ１０７での判定の結果、切替許可信号ではなく切替拒否信号をシリアルインタフェース回路２５を介して受信した場合には、モード切替を拒否する（Ｓ１０８）。

【0027】

本実施形態では、ＨＵＢモードからホストモードへの切り替えを行う際に、シリアルインタフェース回路２５を介してＵＳＢ周辺機器１０と通信を行い、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との通信状態を確認した後に、モード切り換えを行う。これにより、ＵＳＢ周辺機器とＵＳＢ方式通信を行うＵＳＢホスト機器を適切に切り替えることができる。

【0028】

続いて、モード切り換えにおけるＵＳＢ周辺機器１０の動作について、図３を用いて説明する。図３は、ＵＳＢ周辺機器１０がＵＳＢホスト機器２０から切替許可要求信号を受信した際の動作を示すフローチャートである。

【0029】

ＵＳＢ周辺機器１０の制御回路１１は、ＵＳＢホスト機器２０から切替許可要求信号をシリアルインタフェース回路１３を介して受信すると（Ｓ２０１）、他のＵＳＢホスト機

器、つまり、ＵＳＢホスト機器３０とＵＳＢホスト機器２０を介して通信中か否かを判定する（Ｓ２０２）。通信中か否かの判定は、ＵＳＢ周辺機器１０がＵＳＢホスト機器３０に対してファイルデータを転送中かどうかなど、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との間で所定のデータの送受信が行われているかどうかで判定すればよい。Ｓ２０２での判定の結果、通信中でなければ、制御回路１１は、ＵＳＢホスト機器２０に切替許可信号をシリアルインタフェース回路１３を介して送信する（Ｓ２０３）。一方、Ｓ２０２での判定の結果、通信中と判定された場合は、ＵＳＢホスト機器２０に切替拒否信号をシリアルインタフェース回路１３を介して送信する（Ｓ２０４）。

【0030】

このように、本実施形態では、ＵＳＢホスト機器２０がＨＵＢモードで動作中に、モード切替信号を受信してモードの切り換えが必要になった際に、ＵＳＢ周辺機器１０とＵＳＢホスト機器３０との１対１の通信で使用されているＵＳＢインタフェース回路２２とは別のシリアルインタフェース回路２５を介して、ＵＳＢ周辺機器１０と通信を行う。これにより、ＵＳＢ周辺機器１０に対してモードの切り替えを行ってよいかどうかを確認した後に、ＵＳＢ周辺機器１０がＵＳＢホスト機器３０と通信を行っていない場合のみ、モードの切り換えを行うことができる。よって、例えば、ＵＳＢ周辺機器１０からＵＳＢホスト機器３０に対してデータの転送を行うなどの１対１の通信中に、モードの切り換えが実行され、データ破壊等の不具合が生じることを未然に防ぐことができる。

【0031】

［第２の実施の形態］

図４は、第２の実施の形態に係るＵＳＢ機器システムの全体の接続構成を示す図である。本実施形態に係るＵＳＢ機器システムは、撮像処理した画像を画像データとして記憶するデジタルカメラ１００と、デジタルカメラ１００等から提供された画像データの印刷処理を行うデジタルプリンタ２００と、デジタルカメラ１００等から提供された画像データを保存するなど一般的なコンピュータ処理を行うパーソナルコンピュータ（以下、ＰＣとする）３００とを含む。

【0032】

デジタルカメラ１００とデジタルプリンタ２００とは、複数の制御ピンを含むコネクタ（図示せず）を介して接続される。デジタルカメラ１００とデジタルプリンタ２００とは、このコネクタを介して、ＵＳＢ方式での通信を行ったり、所定のシリアル方式での通信を行ったり、デジタルプリンタ２００からデジタルカメラ１００に電源を供給し、デジタルカメラ１００に内蔵された充電式電池の充電を行う。

【0033】

デジタルプリンタ２００とＰＣ３００とは、ＵＳＢコネクタ（図示せず）を介してＵＳＢケーブル４００で接続される。ＰＣ３００は、自身をホストとして、デジタルカメラ１００とデジタルプリンタ２００を介して、ＵＳＢ方式で通信を行う。なお、ＰＣ３００は、自身をホストとして、デジタルプリンタ２００とＵＳＢ方式で通信を行うように構成しても良い。この場合は、デジタルプリンタ２００をＵＳＢ周辺機器として機能させるために、後述するＵＳＢホスト制御回路２１２の他にＵＳＢデバイス制御回路を備える必要がある。

【0034】

デジタルプリンタ２００には、ユーザインタフェース２６０として、デジタルカメラ１００に保存された画像データを取得して、印刷処理を行う際にユーザが押下する印刷ボタン２６１と、デジタルカメラ１００に保存された画像データをＰＣ３００に転送する際にユーザが押下する転送ボタン２６２とが備えられている。これにより、ユーザは、デジタルプリンタ２００を操作することで、デジタルカメラ１００に保存された画像データを印刷したり、画像転送することができる。

【0035】

つまり、本実施形態に係るＵＳＢ機器システムでは、ＵＳＢ周辺機器であるデジタルカメラ１００が、デジタルプリンタ２００をＵＳＢホストとしてＵＳＢ方式で通信を行うこ

とで例えば印刷処理を行う。また、ＵＳＢ周辺機器であるデジタルカメラ１００は、ＰＣ３００をＵＳＢホストとし、さらにデジタルプリンタ２００をＨＵＢとして、デジタルプリンタ２００を介してＵＳＢ方式で通信を行うことで例えば画像転送処理を行う。

【0036】

このようなＵＳＢ機器システムにおいて、ユーザが転送ボタン２６２を押下した直後に、印刷ボタン２６１を押下したとする。印刷ボタン２６１の押下に応じて、デジタルプリンタ２００が印刷を開始するには、ＵＳＢの規格上、デジタルカメラ１００とＰＣ３００との間で確立されたＵＳＢ方式での通信路を一旦切断した後、改めてデジタルカメラ１００とデジタルプリンタ２００との間でＵＳＢ方式での通信路を確立する必要がある。しかし、デジタルカメラ１００からＰＣ３００への画像データの転送が完了する前など、デジタルカメラ１００とＰＣ３００とが通信の最中に、デジタルカメラ１００とＰＣ３００との間で確立されたＵＳＢ方式での通信路を切断してしまうと、画像データが破壊されるなどの不具合が発生する虞がある。本実施形態では、このように、ユーザが転送ボタン２６２を押下した直後に、印刷ボタン２６１を押下した場合などでも、画像データが破壊されるなどの不具合の発生を防ぐ。

【0037】

続いて、本実施形態に係るＵＳＢ機器システムを構成する各機器について、図５に示すブロック構成図を用いてさらに説明する。

【0038】

＜デジタルカメラ＞

制御回路１１０は、デジタルカメラ１００の全体の動作を制御する回路であり、カメラ制御回路１１１、ＵＳＢデバイス制御回路１１２、シリアル制御回路１１３を含む。

【0039】

カメラ制御回路１１１は、画像処理装置１４０を制御して、例えば、ＣＣＤ画像センサを用いて画像を取り込み、取り込んだ画像を処理してＲＧＢ画像を得て、さらにそのＲＧＢ画像から、輝度信号と色差信号に変換したデータをＪＰＥＧ圧縮して、着脱可能なメモリカードなどの記憶媒体に記憶する。さらに、カメラ制御回路１１１は、ＰＣ３００とＵＳＢインタフェース回路１２０を介してＵＳＢ方式での通信中に、デジタルプリンタ２００からシリアルインタフェース回路１３０を介して、切替許可要求信号を受信した場合に、デジタルカメラ１００とＰＣ３００との通信状態に応じて、切替を許可するかどうかを判定し、その判定結果として、切替許可信号もしくは切替拒否信号をシリアルインタフェース回路１３０を介してデジタルプリンタ２００に送信する。

【0040】

ＵＳＢデバイス制御回路１１２は、ＵＳＢインタフェース回路１２０を介して行われるＵＳＢ方式での通信の制御を行う。シリアル制御回路１１３は、シリアルインタフェース回路１３０を介して行われる所定のシリアル方式での通信の制御を行う。

【0041】

ＵＳＢインタフェース回路１２０は、ＵＳＢ方式で通信を行うための通信インタフェースである。シリアルインタフェース回路１３０は、所定のシリアル方式で通信を行うための通信インタフェースであり、カメラ制御回路１１１から送信された切替許可信号や切替拒否信号をデジタルプリンタ２００に向けて送信したり、カメラ電源・充電回路２９０から出力された電力を電源回路１７０に給電する制御を行う際に使用される。なお、ＵＳＢインタフェース回路１２０と、シリアルインタフェース回路１３０とは、複数の制御ピンを含む一つのコネクタで構成することができる。

【0042】

メモリ１５０は、制御回路１１０のワークメモリとして動作するＲＡＭや、デジタルカメラ１００が起動する際の起動プログラムなどを記憶するＲＯＭや、画像データを記憶するメモリカードなどの記憶媒体を含む。

【0043】

ディスプレイ１６０は、カメラ制御回路１１１の制御のもと、画像処理装置１４０で撮

像することで得られた画像を表示したり、デジタルプリンタ２００やＰＣ３００から送信された信号に基づいて、例えばエラー情報を表示する。

【0044】

電源回路１７０は、デジタルカメラ１００が動作する際に必要となる電力を制御回路１１０等に供給する。また、電源回路１７０は、充電式電池を含み、デジタルプリンタ２００から供給された電力により、充電が行われる。

【0045】

このように構成されたデジタルカメラ１００は、ＰＣ３００とＵＳＢインタフェース回路１２０を介してＵＳＢ方式で通信中に、デジタルプリンタ２００からシリアルインタフェース回路１３０を介して、切替許可要求信号を受信した場合に、カメラ制御回路１１１において、デジタルカメラ１００とＰＣ３００とのＵＳＢ方式での通信を中断してよいかどうかの判定を行う。そして、判定の結果に応じて、デジタルカメラ１００は、切替許可信号もしくは切替拒否信号をシリアルインタフェース回路１３０を介してデジタルプリンタ２００に送信する。

【0046】

＜デジタルプリンタ＞

制御回路２１０は、デジタルプリンタ２００の動作全体を制御する回路であり、プリンタ制御回路２１１、ＵＳＢホスト制御回路２１２、シリアル制御回路２１３を含む。

【0047】

プリンタ制御回路２１１は、ユーザがユーザインタフェース２６０に含まれる印刷ボタン２６１を押下することで入力される印刷指示信号に応じて、デジタルカメラ１００からＵＳＢインタフェース回路２２０を介して送信された画像データに基づいてプリント処理装置２７０を制御し、印刷処理を実行する。また、プリンタ制御回路２１１は、カメラ電源・充電回路２９０を制御して、デジタルカメラ１００に電力を供給する。

【0048】

さらに、プリンタ制御回路２１１は、切替回路２４０を制御して、デジタルカメラ１００とＵＳＢ方式でＵＳＢインタフェース回路２２０を介して通信するホストモードと、デジタルカメラ１００とＰＣ３００との通信の中継を行うＨＵＢモードとの切り換えを行う。

【0049】

本実施形態におけるプリンタ制御回路２１１は、さらに、印刷指示信号が入力された場合、ＨＵＢモードからホストモードへの切り替え制御を行う前に、モード切り換えを実行してよいか否かの確認を行うために、シリアルインタフェース回路２５０を介してデジタルカメラ１００に切替許可要求信号を送信する。そして、この切替許可要求信号に応じてデジタルカメラ１００からシリアルインタフェース回路２５０を介して切替許可信号を受信するのを待って、ＨＵＢモードからホストモードへの切り換えの指示となる切替制御信号を切替回路２４０に送信する。

【0050】

ＵＳＢホスト制御回路２１２は、ＵＳＢインタフェース回路２２０を介して行われるＵＳＢ方式での通信の制御を行う。シリアル制御回路２１３は、シリアルインタフェース回路２５０を介して行われる所定のシリアル方式での通信の制御を行う。

【0051】

ＵＳＢインタフェース回路２２０およびＵＳＢインタフェース回路２３０は、ＵＳＢ方式で通信を行うための通信インタフェースである。シリアルインタフェース回路２５０は、所定のシリアル方式で通信を行うための通信インタフェースであり、プリンタ制御回路２１１から送信された切替許可要求信号をデジタルカメラ１００に向けて送信したり、カメラ電源・充電回路２９０から出力された電力をデジタルカメラ１００に給電する制御を行う際に使用される。

【0052】

メモリ２８０は、制御回路２１０のワークメモリとして動作するＲＡＭや、デジタルプ

リンタ２００が起動する際の起動プログラムなどを記憶するＲＯＭなどの記憶媒体を含む。

【0053】

ユーザインタフェース２６０は、印刷ボタン２６１や転送ボタン２６２などを含み、ユーザ操作により、所定の制御信号が制御回路２１０に入力される。また、ユーザインタフェース２６０にＬＣＤを含めて、制御回路２１０から出力された制御信号に基づいて、例えば、デジタルカメラ１００の充電状態を表示させたり、デジタルカメラ１００からＰＣ３００への画像データ転送中の状態を表示させたり、各種エラーの状態を表示させてもよい。

【0054】

プリント処理装置２７０は、プリンタ制御回路２１１の制御のもと、デジタルカメラ１００等から提供された画像データの印刷処理を行う。

【0055】

このように構成されたデジタルプリンタ２００において、デジタルカメラ１００がＰＣ３００とＵＳＢインタフェース回路２２０およびＵＳＢインタフェース２３０を介してＵＳＢ方式で通信中に、印刷ボタン２６１が押下されることで、ＨＵＢモードからホストモードへの切り替えを行う場合、プリンタ制御回路２１０が、シリアルインタフェース回路２５０を介して、デジタルカメラ１００に切替許可要求信号を送信する。次いで、プリンタ制御回路２１０は、デジタルカメラ１００が切替許可要求信号に応じて送信した切替許可信号を受信するのを待って、切替制御信号を切替回路２４０に送信し、切替回路２４０は、ＨＵＢモードからホストモードにモード切り替えを行う。これにより、デジタルカメラ１００とＰＣ３００との間で確立されたＵＳＢ方式での通信路を強制的にデジタルプリンタ２００が切断することで、例えば、デジタルカメラ１００からＰＣ３００に転送中の画像データが破壊されるなどの不具合を防止することができる。

【0056】

＜パーソナルコンピュータ＞

ＵＳＢインタフェース回路３２０は、ＵＳＢ方式で通信を行うための通信インタフェースである。ＵＳＢホスト制御回路３１０は、デジタルカメラ１００やデジタルプリンタ２００とＵＳＢ方式で通信する際の通信制御を行う。ＰＣ３００は、ＵＳＢホストとして、デジタルカメラ１００から転送された画像データを自身のメモリ（図示せず）に保存したり、メモリに記憶された画像データをデジタルプリンタ２００を用いて印刷する。

【0057】

続いて、本実施形態に係るＵＳＢ機器システムにおいて、デジタルカメラ１００とＰＣ３００とがＵＳＢインタフェース回路１２０，２２０，２３０，３２０を介してＵＳＢ方式で通信を行っている最中に、印刷ボタン２６１がユーザにより押下され、印刷指示信号がプリンタ制御回路２１１に入力された場合の各機器の動作について、モード切替を拒否する場合と、モード切替を許可する場合とに分けて図６，７に示す状態遷移図を用いて説明する。

【0058】

＜モード切替拒否＞

図６において、転送ボタン２６２がユーザにより押下されると、デジタルカメラ１００とＰＣ３００とは、ＵＳＢデバイス制御回路１１２とＵＳＢホスト制御回路３１０との間にＵＳＢ通信路を確立する。そして、ＰＣのＵＳＢホスト制御回路３１０からカメラのＵＳＢデバイス制御回路１１２に対して表示要求が送信される（Ｓ３０１）。カメラのＵＳＢデバイス制御回路１１２は、この表示要求を受けて、カメラ制御回路１１１を介して、ＰＣ３００への画像転送中を示すメッセージをディスプレイ１６０に表示する（Ｓ３０２）。続いて、ファイル転送に関連するＰＴＰ（Ｐｉｃｔｕｒｅ　Ｔｒａｎｓｆｅｒ　Ｐｒｏｔｏｃｏｌ）コマンドがＰＣのＵＳＢホスト制御回路３１０からカメラのＵＳＢデバイス制御回路１１２へ送信され、ファイル転送が行われる（Ｓ３０３）。ＰＴＰコマンドの具体例としては、ＧｅｔＯｂｊｅｃｔやＳｅｎｄＯｂｊｅｃｔである。

【0059】
その後、ＰＴＰコマンドがＰＣのＵＳＢホスト制御回路３１０から送信されず、所定の時間、例えば、３秒間が経過して時点で、カメラのシリアル制御回路１１３は、ＵＳＢの通信状態がアイドル状態に遷移したことをシリアルインタフェース回路１３０，２５０を介して、デジタルプリンタ２００に通知する（Ｓ３０４）。
【0060】
ここで、ユーザが印刷ボタン２６１を押下することで、プリンタ制御回路２１１に印刷指示信号が入力されたとする（Ｓ３０５）。すると、プリンタ制御回路２１１は、シリアルインタフェース回路２５０，１３０を介して、具体的にはシリアルインタフェース回路２５０を構成するコネクタに含まれる制御ピンの中で、イベント用１線シリアルに相当する制御ピンを介して、切替許可要求信号がカメラ制御回路１１１に送信される（Ｓ３０６）。
【0061】
さらに、カメラ制御回路１１１が切替許可要求信号を受信後、３秒経過する前に、ＰＣのＵＳＢホスト制御回路３１０から別のＰＴＰコマンドがカメラのＵＳＢデバイス制御回路１１２に送信されると（Ｓ３０７）、カメラ制御回路１１１は、切替許可要求信号を受信後、３秒経過する前にＰＴＰコマンドを受信したと判断して、シリアルインタフェース回路１３０，２５０を介して、具体的にはシリアルインタフェース回路１３０を構成するコネクタに含まれる制御ピンの中で、前述のイベント用１線シリアルとは異なる２線シリアルに相当する制御ピンを介して、モード切替の拒否を示す切替拒否信号をプリンタのシリアル制御回路２１３に送信し（Ｓ３０８）、ＵＳＢの通信状態がアイドル状態から再度ＰＣ接続状態に遷移したことをシリアルインタフェース回路１３０，２５０を介してプリンタのシリアル制御回路２１３に通知する（Ｓ３０９）。
【0062】
以上のように、ユーザが印刷ボタン２６１を押下することに伴い、デジタルプリンタ２００の動作モードを、ＨＵＢモードからホストモードに切り替える前に、デジタルプリンタ２００は、デジタルカメラ１００に対して、モード切り替えを行ってよいかどうかを確認する。そして、デジタルカメラ１００は、ＰＣ３００との間でファイル転送に伴うＰＴＰコマンドがやり取りされていると判断する場合、具体的には、切替許可要求信号を受信してから所定期間（例えば、３秒間）経過する前に、ＰＣ３００からＰＴＰコマンドを受信した場合に、デジタルカメラ１００は、デジタルプリンタ２００に対して、ＨＵＢモードからホストモードへの切り替えの拒否を示す切替拒否信号を送信する。これにより、デジタルカメラ１００とＰＣ３００との間でファイル転送に伴うＰＴＰコマンドがやり取りされている最中にデジタルプリンタ２００は、ＨＵＢモードからホストモードに切り替えを行わない。よって、デジタルカメラ１００とＰＣ３００との間でＵＳＢ方式通信でやり取りされているデータの破壊などの不具合を防ぐことができる。
【0063】
＜モード切替許可＞
図7において、Ｓ４０１～Ｓ４０６までの遷移は、図6におけるＳ３０１～Ｓ３０６までの遷移と同様であるため、説明を割愛し、Ｓ４０７から説明する。
【0064】
カメラ制御回路１１１は、Ｓ４０６において、プリンタ制御回路２１１からシリアルインタフェース回路２５０，１３０を介して切替許可要求信号を受信してから、所定期間（例えば、３秒間）経過するまで、ＰＣ３００からＰＴＰコマンドを受信しなかったことを確認するのを待って、シリアルインタフェース回路１３０，２５０を介してプリンタのシリアル制御回路２１３に切替許可信号を送信する（Ｓ４０７）。さらに、カメラ制御回路１１１は、ＵＳＢの通信状態がＰＣ接続状態からアイドル状態に遷移したことをシリアルインタフェース回路１３０，２５０を介してプリンタのシリアル制御回路２１３に通知する（Ｓ４０８）。
【0065】

プリンタ制御回路２１１は、切替許可信号の受信に応じて、切替回路２４０に対して切替制御信号を送信し、切替回路２４０は、この切替制御信号に応じて、ＨＵＢモードからホストモードにモード切替を行う。プリンタ制御回路２１１は、切替回路２４０でのモードの切り替えが完了したのを確認したのち、シリアルインタフェース回路２５０，１３０を介して、カメラ制御回路１１１にプリンタＵＳＢ接続要求を送信する（Ｓ４０９）。その後、ＵＳＢ規格に基づき、プリンタのＵＳＢ制御回路２１１とカメラのＵＳＢデバイス制御回路１１２との間にＵＳＢ通信路が確立され、カメラのシリアル制御回路１１３からのプリンタのシリアル制御回路２１３に対して、ＵＳＢの通信状態がアイドル状態からプリンタ接続状態に遷移したことが通知される（Ｓ４１０）。

【0066】

以上のように、ユーザが印刷ボタン２６１を押下することに伴い、デジタルプリンタ２００を、ＨＵＢモードからホストモードに切り替える前に、デジタルプリンタ２００は、デジタルカメラ１００に対して、モード切り替えをおこなってよいかどうかを確認する。そして、デジタルカメラ１００は、ＰＣ３００との間でファイル転送に伴うＰＴＰコマンドがやり取りされていると判断しない場合、具体的には、切替許可要求信号を受信してから所定期間（例えば、３秒間）、ＰＣ３００からＰＴＰコマンドを受信しなかった場合に、デジタルプリンタ２００に対して、ＨＵＢモードからホストモードへの切り替えの許可を示す切替拒否信号を送信する。これにより、デジタルカメラ１００とＰＣ３００との間でファイル転送に伴うＰＴＰコマンドがやり取りされていなければ、デジタルプリンタ２００は、ＨＵＢモードからホストモードに切り替えを行う。よって、デジタルカメラ１００とＰＣ３００との間でＵＳＢ方式通信でやり取りされているデータの破壊などを行うことなく、ＨＵＢモードからホストモードへの切り替えを正常に実行することができる。

【0067】

また、本実施形態では、デジタルカメラ１００とデジタルプリンタ２００との間で切替許可要求信号や、切替拒否・許可信号などをやり取りする際に使用するシリアル線は、デジタルカメラ１００の充電制御等を行う際に利用されるシリアル線と併用することができる。つまり、デジタルプリンタ２００とデジタルカメラ１００との間でやり取りされるその他の信号を伝達する際に利用される既存のシリアル線を併用できる。よって、デジタルプリンタ２００がデジタルカメラ１００とＰＣ３００との通信状態を確認するために、新たに専用のシリアル線を備える必要がないため、製造コストを抑えることができる。また、デジタルカメラ１００やデジタルプリンタ２００の小型化を図ることもできる。さらに、上記シリアル線を利用して、デジタルプリンタに関する識別情報を伝達することにより、ＵＳＢ規格では不可能であったＵＳＢ周辺機器からＵＳＢホストのタイプを識別することもできる。例えば、デジタルカメラ１００が、自身に充電機能を内蔵したデジタルプリンタ２００がＵＳＢ接続されたか、その他のＵＳＢホストがＵＳＢ接続されたかを、上記シリアル線を介して識別することができる。

【0068】

なお、本実施形態では、ＨＵＢモードからホストモードへの切り替え時における切り替えタイミングについて説明した。しかし、デジタルプリンタ２００での動作モードが他に存在する場合には、そのモードへの切り替えの際にも本実施形態に係る方法は利用することができる。以下、一例を説明する。

【0069】

デジタルプリンタ２００に、ＷｉＦｉ（Ｗｉｒｅｌｅｓｓ　Ｆｉｄｅｌｉｔｙ）などの無線通信やＡＤＳＬや光ファイバなどの有線通信を介してインターネット等の外部ネットワークに接続する通信回路を設け、ユーザインタフェース２６０に、送信ボタンを加える。そして、切替回路２４０は、ＨＵＢモードとして、ＰＣ３００への接続モード以外に、インターネットへの接続モードへの切り替えを行えるように構成する。

【0070】

ユーザがこの送信ボタンを押下すると、切替回路２４０によりインターネット接続モードへの切り替えが行われ、デジタルカメラ１００に記憶された画像データ群の中から指定

した画像データを、例えばインターネット等の外部ネットワーク上に設置されたファイルサーバの所定のフォルダに転送する。

【0071】

このような送信ボタンを備えたデジタルプリンタ２００において、ユーザが、送信ボタンを押下した直後に転送ボタンを押下したり、印刷ボタンを押下したとする。このとき、デジタルカメラ１００とインターネット上のファイルサーバとの通信状態を確認せずに、デジタルプリンタ２００が強制的にＰＣ３００への接続モードやホストモードへの切り替えを行うと、デジタルカメラ１００とインターネット上のファイルサーバとの間でやり取りされていたデータの破壊等の不具合が生じることがある。

【0072】

そこで、この場合にも、上記と同様に、デジタルプリンタ２００がシリアルインタフェース回路２５０，１３０を介して切替許可要求信号を送信し、デジタルカメラ１００から切替許可信号を受信するのを待って、デジタルプリンタ２００がモード切替を行うことで、デジタルカメラ１００とインターネット上のファイルサーバ等との間でやり取りされていたデータの破壊等の不具合の発生を防止することができる。

【0073】

［第３の実施の形態］

図８は、第３の実施の形態に係るＵＳＢ機器システムの全体構成を示すブロック図である。第３の実施の形態に係るＵＳＢ機器システムは、デジタルカメラ１００に、ＵＳＢコネクタとして、ＵＳＢインタフェース回路１２０の他に、ＵＳＢインタフェース回路１２１が備えられている点、さらに、ＰＣ３００にＵＳＢコネクタとして、ＵＳＢインタフェース回路３１１が備えられている点で、第２の実施の形態に係るＵＳＢ機器システムと異なる。

【0074】

通常の接続形態では、第２の実施の形態に示したように、ＵＳＢ周辺機器であるデジタルカメラ１００は、ＵＳＢインタフェース回路１２０，２２０を介してＵＳＢホストの１つであるデジタルプリンタ２００と接続される。そして、デジタルプリンタ２００ともうひとつのＵＳＢホストであるＰＣ３００とは、ＵＳＢインタフェース回路２３０，３２０を介してＵＳＢケーブル４００経由で接続される。このような接続形態により、ユーザは、正常にデジタルカメラ１００に保存されている画像データをデジタルプリンタ２００で印刷したり、ＰＣ３００にファイル転送することができる。

【0075】

しかし、デジタルカメラ１００に他のＵＳＢコネクタとして別のＵＳＢインタフェース回路１２１が備えられている場合、例えば不慣れなユーザが誤って、図８に示すように、上記の接続状態において、さらにデジタルカメラ１００とＰＣ３００とを別のＵＳＢケーブル４１０を介して接続してしまう場合がある。

【0076】

このような接続形態にすると、ＵＳＢ周辺機器であるデジタルカメラ１００に備えられた１つのＵＳＢデバイス制御回路１１２に対して、２つのＵＳＢホストが接続されることになる。ＵＳＢの規格上、１つのＵＳＢデバイス制御回路に対しては、１つのＵＳＢホストしか接続できないため、上記のように２つのＵＳＢホストが別々のＵＳＢインタフェース回路（ＵＳＢコネクタ）を介して接続されると、ＵＳＢの通信路が正常に確立されない等の不具合を生じることがある。

【0077】

上記のような不具合を防止するために、ＵＳＢ周辺機器のデジタルカメラ１００にＵＳＢインタフェース回路ごとにそれぞれ１つずつＵＳＢデバイス制御回路を備える方法が考えられる。しかし、ＵＳＢインタフェース回路ごとにそれぞれ１つずつＵＳＢデバイス制御回路を搭載すると、デジタルカメラ１００の製造コストが高くなり好ましくない。

【0078】

またその他の方法として、２つのＵＳＢインタフェース回路を同時に使用しないように

切り替え制御する方法が考えられる。この方法によれば、１つのＵＳＢデバイス制御回路で済むというメリットがある。しかし、上記のように各ＵＳＢインタフェース回路にそれぞれＵＳＢホストが接続された場合に、ＵＳＢインタフェース回路を交互に切り替えて使用すると、例えば、データ信号のコンフリクトが生じる虞があり、この方法も好ましくない。

【0079】

上記の点を鑑み、本実施形態では、１つのＵＳＢデバイス制御回路に対して２つのＵＳＢホストが別々のＵＳＢインタフェース回路を介して接続された場合でも、正常に動作するＵＳＢ機器システムを提供するために、次のような構成にする。

【0080】

すなわち、デジタルカメラ１００のＵＳＢインタフェース回路１２０，１２１にそれぞれＵＳＢホストとして、デジタルプリンタ２００とＰＣ３００とが接続された場合、ＵＳＢデバイス制御回路１１２が、同時に２台のＵＳＢホストが接続されたことを検知して、２つのＵＳＢホストのＵＳＢ接続のプルアップを解除することで、実質的に非接続状態にする。これにより、２つのＵＳＢホストが１つのＵＳＢデバイス制御回路に接続されることが原因で、データ信号のコンフリクトが発生することを防止することができる。また、ＵＳＢデバイス制御回路をＵＳＢインタフェース回路ごとに用意する必要がないため、製造コストも抑えることができる。

【0081】

ここで、本実施形態に係るＵＳＢデバイス制御回路１１２の動作について詳しく説明する。

【0082】

図９は、ＵＳＢデバイス制御回路１１２およびＵＳＢインタフェース回路１２０，１２１の構成をより詳細に示したブロック図である。ＵＳＢデバイス制御回路１１２は、データ端子としてＤ＋端子とＤ－端子とをそれぞれ１つずつ備え、さらに、電源端子としてＶｂｕｓ端子とＧＤＮ端子とのペアを、各ＵＳＢインタフェースごとに備える。通常、ＵＳＢ周辺機器にＵＳＢホスト機器が接続されると、ＵＳＢホスト機器から電力が供給され、一方のＶｂｕｓ端子に電源電圧が印加される。そして、Ｖｂｕｓ電圧が所定の閾値（例えば、ＵＳＢ規格推奨の１．２Ｖ以上等）に達したと判断すると、ＵＳＢデバイス制御回路１１２は、ＵＳＢインタフェース回路を介してＵＳＢホストが接続されたと認識して、Ｄ＋端子のプルアップを行い、ＵＳＢ接続を接続状態にした後、ＵＳＢ規格に従ってデータ通信を行う。

【0083】

本実施形態では、上記の動作により一方のＵＳＢインタフェース回路を介して一方のＶｂｕｓ端子に電源電圧が印加され、Ｄ＋端子がプルアップとなった後に、さらに、もう一方のＵＳＢインタフェース回路を介してもう一方のＶｂｕｓ端子に電源電圧が印加されるのを検知すると、ＵＳＢデバイス制御回路１１２は、ＵＳＢインタフェース回路１２０，１２１を介して２つのＵＳＢホスト機器が接続されたと認識して、Ｄ＋端子のプルアップを解除することで、ＵＳＢ接続を実質的に非接続状態にする。

【0084】

次いで、ＵＳＢ制御回路１１２は、カメラ制御回路１１１は非接続状態に移行したことを通知する。カメラ制御回路１１１は、その通知を受けて、ディスプレイ１６０上にエラーメッセージを表示し、ユーザに対して警告を行う。これにより、２つのＵＳＢホストが１つのＵＳＢデバイス制御回路に接続されることが原因で、データ信号のコンフリクトが発生することを防止することができる。さらに、ユーザに対しては警告が行われるため、ユーザは、デジタルカメラ１００とＰＣ３００とを接続したＵＳＢケーブル４１０を抜くか、デジタルカメラ１００をデジタルプリンタ２００から切り離すといった行為が必要であると認識することができる。

【0085】

なお、本実施形態では、ＵＳＢホスト機器が接続されたことをＶｂｕｓ端子に電源電圧

が印加されたことに基づいて検知する例を示した。しかし、この例に限らずその他の方法で、ＵＳＢデバイス制御回路１１２は、ＵＳＢホスト機器が接続されことを検知しても構わない。また、本実施形態では、Ｄ＋端子のプルアップを解除することで、ＵＳＢ接続を実質的に非接続状態にする例を示した。しかし、ＵＳＢ方式での通信スピードの違いなどに応じて、Ｄ－端子のプルアップを解除することで、ＵＳＢ接続を実質的に非接続状態にしてもよい。

【0086】

例えば、デジタルカメラ１００にＵＳＢインタフェース回路１２０を介して、デジタルプリンタ２００が接続されたか、もしくは他のＵＳＢホスト機器が接続されたかを検知させるために、デジタルカメラ１００がデジタルプリンタ２００に接続された際、ＵＳＢの通信路を確立する前に、デジタルプリンタ２００からシリアルインタフェース回路２５０，１３０を介して、プリンタ（クレードル）接続検出信号を出力するように構成することがある。

【0087】

このプリンタ接続検出信号は、シリアルインタフェース回路２５０，１３０を介して、ＵＳＢの通信路が確立される前にデジタルカメラ１００に出力される。よって、このプリンタ接続検出信号を検知することで、ＵＳＢデバイス制御回路１１２がデジタルプリンタ２００の接続を認識すれば、Ｖｂｕｓ端子に電源電圧が印加されたことを検知する場合よりも早いタイミングで、それを認識することができる。

【図面の簡単な説明】

【0088】

【図1】本発明に係る第１の実施の形態におけるＵＳＢ機器システムの全体構成を示すブロック図である。

【図2】本発明に係る第１の実施の形態におけるＵＳＢホスト機器がモード切り換え時に行う動作を示すフローチャート図である。

【図3】本発明に係る第１の実施の形態におけるＵＳＢ周辺機器がＵＳＢホスト機器から切替許可要求信号を受信した際の動作を示すフローチャート図である。

【図4】本発明に係る第２の実施の形態におけるＵＳＢ機器システムの接続形態を示す図である。

【図5】本発明に係る第２の実施の形態におけるＵＳＢ機器システムの全体構成を示すブロック図である。

【図6】デジタルカメラとＰＣとがＵＳＢ方式で通信を行っている最中に、印刷ボタンがユーザにより押下され、印刷指示信号がデジタルプリンタに入力された場合における、モード切替拒否時の各機器の動作を説明するための状態遷移図である。

【図7】デジタルカメラとＰＣとがＵＳＢ方式で通信を行っている最中に、印刷ボタンがユーザにより押下され、印刷指示信号がデジタルプリンタに入力された場合における、モード切替許可時の各機器の動作を説明するための状態遷移図である。

【図8】本発明に係る第３の実施の形態におけるＵＳＢ機器システムの全体構成を示すブロック図である。

【図9】本発明に係る第３の実施の形態でのＵＳＢデバイス制御回路１１２およびＵＳＢインタフェース回路１２０，１２１の構成をより詳細に示したブロック図である。

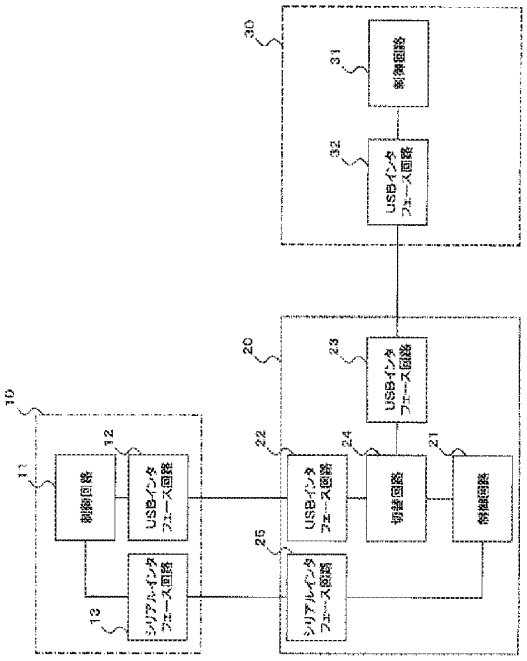
【符号の説明】

【0089】

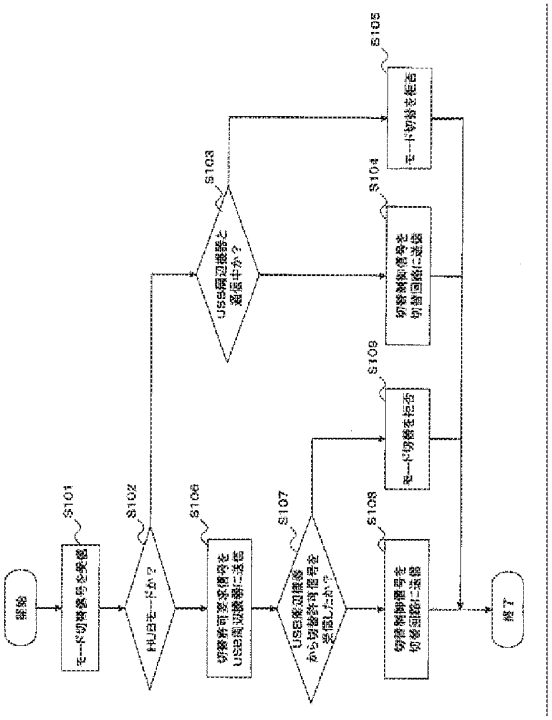
１０　ＵＳＢ周辺機器、１１，２１，３１，１１０，２１０　制御回路、１２，２２，２３，３２，１２０，１２１，２２０，２３０，３２０，３１１　ＵＳＢインタフェース回路、１３，２５，１３０，２５０　シリアルインタフェース回路、２０，３０　ＵＳＢホスト機器、２４，２４０　切替回路、１００　デジタルカメラ、１１１　カメラ制御回路、１１２　ＵＳＢデバイス制御回路、１１３　シリアル制御回路、１４０　画像処理装置、１５０，２８０　メモリ、１６０　ディスプレイ、１７０　電源回路、２００　デジタルプリンタ、２１１　プリンタ制御回路、２１２，３１０　ＵＳＢホスト制御回路、２

６０　ユーザインタフェース、２６１　印刷ボタン、２６２　転送ボタン、２７０　プリント処理装置、２９０　カメラ電源・充電回路、４００，４１０　ＵＳＢケーブル。

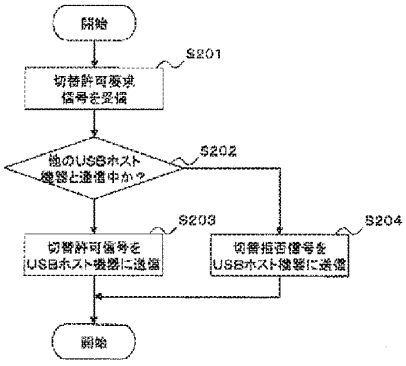
【図1】



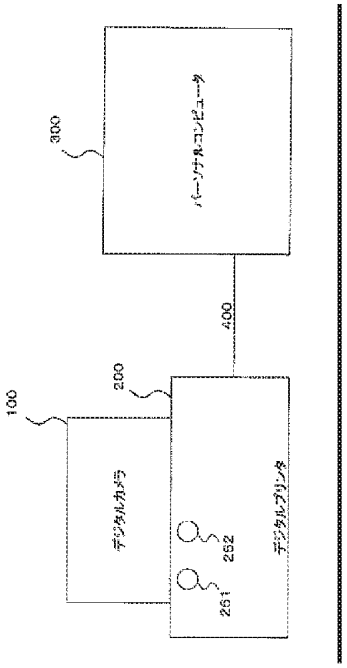
【図2】



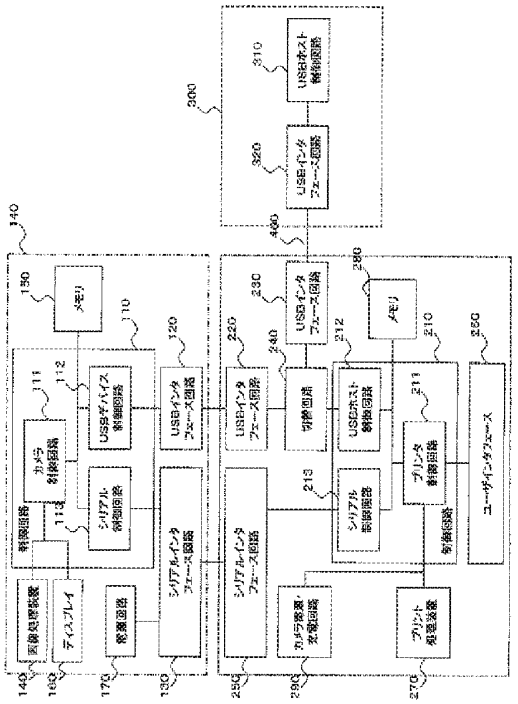
【図3】


開始
S201
切替許可通知
信号を受信
他のUSBホスト
機器と通信中か？
S202
S203
S204
切替許可信号を
USBホスト機器に送信
切替拒否信号を
USBホスト機器に送信
開始

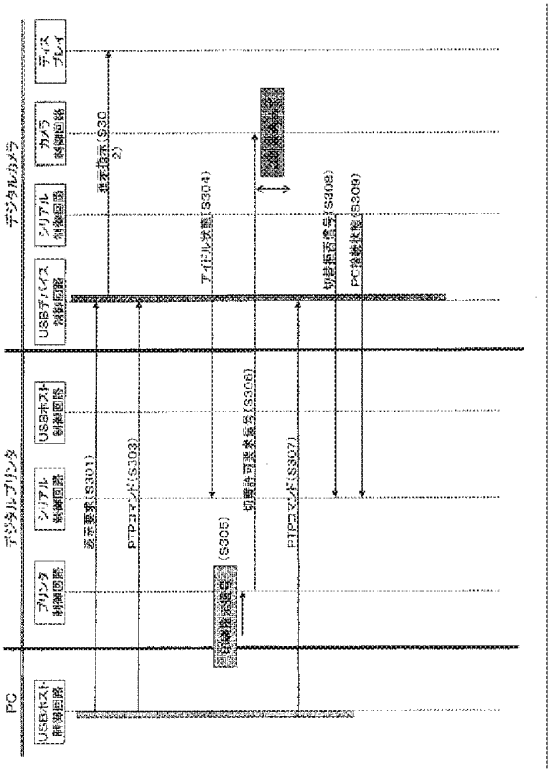
【図4】


300
パーソナルコンピュータ
400
200
100
デジタルカメラ
252
251
デジタルプリンタ

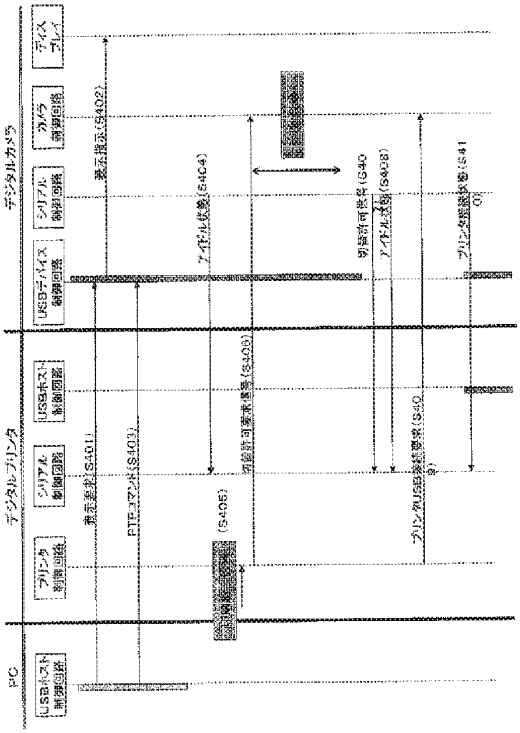
【図5】


300
310
USBホスト制御回路
320
USBインタフェース回路
400
140
150
メモリ
110
120
111
112
113
カメラ制御回路
USBデバイス制御回路
シリアル制御回路
USBインタフェース回路
シリアルインタフェース回路
220
230
240
USBインタフェース回路
切替回路
260
メモリ
212
210
211
213
USBホスト制御回路
プリンタ制御回路
シリアル制御回路
制御回路
250
ユーザインタフェース
画像処理装置
ディスプレイ
操作回路
シリアルインタフェース回路
カメラ信号処理回路
プリント処理装置
140
160
170
130
250
280
270

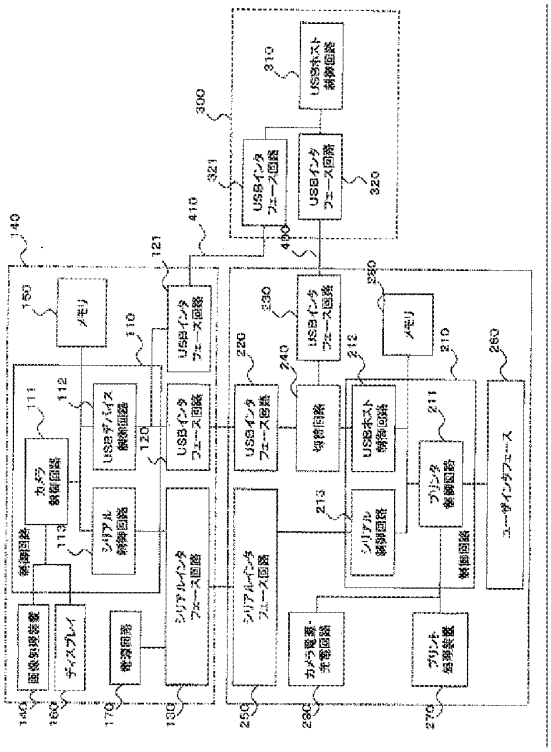
【図6】


デジタルカメラ
USBデバイス制御回路
シリアル制御回路
カメラ制御回路
ディスプレイ
デジタルプリンタ
USBホスト制御回路
シリアル制御回路
プリンタ制御回路
PC
USBホスト制御回路
通知要求(S301)
ETPコマンド(S303)
(S305)
切替許可通知(S306)
ETPコマンド(S307)
表示指示(S308)
アイドル状態(S304)
切替拒否信号(S308)
PC接続状態(S309)

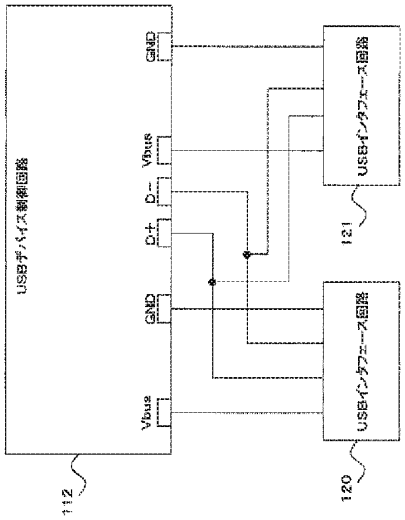
【図７】



【図８】



【図９】



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(54) Title: INTEGRATING MEDIA DISPLAY INTO COMPUTER PERIPHERALS AND COMPUTING SYSTEMS: THE MEDIA MOUSE, MEDIA KEBOARD, MEDIA MONITOR, MEDIA MATE, MEDIA SCREEN AND MEDIABOOK

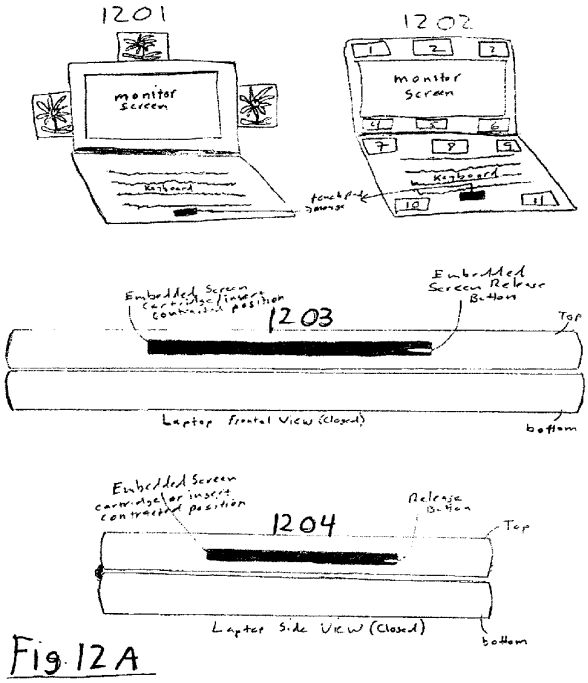


Fig. 12A

(57) Abstract: A computer system such as a laptop or Personal Digital Assistant and a computer peripheral such as a mouse, keyboard, monitor and other new devices wherein the user can create, acquire, assemble, file and transmit media to a display enabled screen or screens on the systems, peripherals or new devices, enhancing personalization through added functionality.

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INTEGRATING MEDIA DISPLAY INTO COMPUTER PERIPHERALS AND COMPUTING SYSTEMS: THE MEDIA MOUSE, MEDIA KEYBOARD, MEDIA MONITOR, MEDIA MATE, MEDIA SCREEN AND MEDIABOOK

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is a non-provisional of and claims priority to U.S. Provisional Application Nos. 61/074,881, filed on June 23, 2008 entitled MEDIA MOUSE, MEDIA KEYBOARD & MEDIA MONITOR; 61/103,636, filed on October 8, 2008 entitled MEDIA MOUSE, MEDIA KEYBOARD, MEDIA MONITOR & MEDIA SCREEN; 61/116,113, filed on November 19, 2009 entitled INTEGRATING MEDIA DISPLAY INTO COMPUTER PERIPHERALS AND SYSTEMS: THE MEDIA MOUSE, MEDIA KEYBOARD, MEDIA MONITOR, MEDIA MATE, MEDIA SCREEN AND MEDIABOOK; and 61/121,695, filed on December 11, 2008 entitled INTEGRATING MEDIA DISPLAY INTO COMPUTER PERIPHERALS AND COMPUTING SYSTEMS: THE MEDIA MOUSE, MEDIA KEYBOARD, MEDIA MONITOR, MEDIA MATE, MEDIA SCREEN AND MEDIABOOK; each of which is incorporated herein by reference in its entirety.

BACKGROUND

Description of the Related Art

[0002] As intended, computer peripherals such as the mouse, keyboard and monitor assist a user in accessing, operating, programming, commanding, processing and communicating with the computer and/or its central processing unit (CPU) usually being connected via a cable such as a universal serial bus (USB) or communicating via a wireless connection such as Bluetooth. The computer mouse, for example, can point, select and transfer input, or commands, from the user to the computer via visual navigation related to the device's movements such as pointing and selecting on the monitor screen. In most traditional computer mice, the devices are protected by a hard plastic shell that surrounds it, with a rolling ball placed on the undercarriage to assist in accurate scrolling on the monitor/screen page and with its execution of user driven tasks. In most cases, the hard plastic shell is simply a colored protective cover and the design's emphasis is to create a durable product that comfortably fits the user's hand. Since its

widespread adoption in the 1980's, the computer mouse has enjoyed many technical advancements that have impacted its performance in communicating, pointing, scrolling and selecting, but not much else.

[0003] Most computer peripherals have standard qualities. For example, most computer keyboards are rectangular and computer monitors are square. With respect to computer mice, most existing models have one main external humpback section that contours to the palm of the hand and is also the largest visible section of the device. In most cases, the functional parts of the devices are framed, protected or otherwise covered by a material such as hard plastics, polymers, rubber, synthetics, sometimes a form of metal or a combination of like materials.

SUMMARY

[0004] Generally, embodiments described herein relate to devices, for example, computer peripheral devices such as computer mice, keyboards and monitors with integrated media displays, as well as to systems and methods related to the same. Traditionally, the emphasis of the design of peripherals such as mice was to create a durable product that comfortably fits the user's hand, not to be personalized to fit the user's visual design preferences. Computer keyboards and monitors, in widespread use for an even longer period of time than the mouse, have a similar background, meaning that they perform their intended tasks as they relate to computing, but do not offer much in the way of personalization for the computer user or enhanced distribution options for Internet or website content providers. For video game players, home electronic system and household appliance users, the same lack of personalization and content distribution opportunities through enhanced media display capabilities characterize the devices.

[0005] Knowing that consumers clearly enjoy the placement of personal, famous and licensed media on hundreds, if not thousands, of products, computer peripherals, laptop computers, personal digital assistants (PDAs), video game consoles, joysticks, cellular telephones (iPhone), other media devices (e.g., iPod, MP3 players, etc.), and home electronic equipment are logical extensions of this personalization phenomenon. Furthermore, content providers want to offer consumers more options to consume and benefit from real time information, transaction updates, product offers, correspondence and entertainment options like sports, music and dramatic art. Thus, several advantages of one or more aspects of the devices are to provide computer users

with the ability to decorate, personalize or inform devices associated with the computing or gaming experience by installing media display screens on said devices and providing the means to transmit, project and broadcast media upon or through them. A further non-limiting advantage is that manufacturers of these types of products and intellectual property licensors can benefit from the described functionality by creating more useful and novel products for their customers.

[0006] The devices, systems and methods described herein can allow users of devices, for example, computer users and video game users, to personalize some computer and video game peripherals, laptop computers and PDAs with media, for example, media that includes but is not limited to: images, designs, digital content, colors, patterns, computer files, text, slideshows, video, moving images, software applications, audio, images that integrate sound, artwork, broadcasts, streaming content from an Internet source, static content from an Internet or file source, content from a specific partner or designated application source, content from a video game console source, content from a personal computer source and other related data from both internal and external sources or points of origin. Some embodiments relate to a laptop computer and a PDA with at least one extra display. Other embodiments relate to a device or devices, such as a computer mouse, computer keyboard and computer monitor with at least one display. Further embodiments relate to computer printers, fax machines, video game consoles and video game joysticks with at least one display. In some other embodiments of the technology, television sets, stereos, home electronic devices and household appliances can have at least one display screen or at least one extra display screen.

[0007] The devices can be configured and designed, for example, to transmit, project and broadcast media on an embedded, attached, integrated or otherwise connected display screen or screens on one or more of said devices. The "display screen or screens" located on or in the devices can be referred to herein as a "Media Screen" or "Media Screens." The media displaying enabled peripherals can be referred to a "Media Mouse," "Media Keyboard" and "Media Monitor." Additionally, a new type of computer peripheral that features the display technology can be referred to as a "Media Mate," and a media display enabled computer laptop can be referred to a "MediaBook." The described devices can take any shape, be made of any suitable material; be accessed or directed via any suitable mechanism, including for example, software or an Internet source; be powered by a connective wire or cable such as USB, batteries, electric power source or a

combination of similar inputs; and can communicate via wire(s) or wirelessly via technology such as Bluetooth®. While the labels Media Screen, Media Mouse, Media Keyboard, Media Monitor, Media Mate, MediaBook, etc. are used above to refer to various devices, it should be understood and appreciated that the terms are meant to broadly cover any device or devices described herein. The terms should not be used to limit the apparatuses to those described in this paragraph or elsewhere herein.

[0008] In some embodiments, for example, the devices can be designed and constructed to provide reasonably comfortable, durable working computer systems and computer peripherals that also allow for the placement of a Media Screen or screens onto the device(s). The screen or screens can fit into place or be secured to the devices by any suitable technique or method. For example, the screen or screens can be fitted into place, screwed, slotted, laid, inserted, glued by an adhesive, molded into a form, curved to fit a specific form, or otherwise adapted to adhere to the shape of the device or to fit in the desired location on the device. In some embodiments, various of the devices, methods and systems contemplated and described herein permit computer systems, computer peripherals, laptop computers, mobile computing devices, video game equipment, home electronic systems and the like to benefit in novel and useful ways from added personalization and broadcast capabilities in the form of media display of user generated or user selected media or provider specific media.

[0009] One embodiment relates to a peripheral device configured to interact with a computer. The peripheral device may comprise at least one display, a housing configured to support the display, a memory configured to store a display content, and a processor coupled to the display and to the memory,. The processor may be further configured to output the display content to the display. The processor may also be configured to receive display content from the computer. The peripheral device may further comprise an input mechanism coupled to the processor. The input device may be configured to receive an input from a user. For example, a the peripheral device may display an e-mail reception notification, an instant message, a tweet, or various other forms of information. The input mechanism may allow a user to interact with the media on the peripheral device by, for example, scrolling through a received display content. Alternatively, the input mechanism could be configured to allow the user to cycle through a plurality of display content items. In various embodiments, the input device may be a button, a touch-screen, a knob, a slide, a biometric scanner, fingerprint detector, or other

type on input. The input mechanism may be configured to communicate the user input to the processor. The processor may be configured to transmit the user input to the computer for action by the computer.

[0010] In another embodiment, the processor may be configured to transmit an identifier identifying the display content to the computer. The processor may be configured to determine a requested action based, at least in part, on the user input and to transmit an indication of the requested action to the computer. In various embodiments, the requested action may comprise displaying the display content on a primary display coupled to the computer or transmitting a different display content to the peripheral device. The processor may be configured to output the different display content to the display.

[0011] The memory in the peripheral device may be configured to store a content source identifier. The processor may be configured to transmit the content source identifier to the computer. In one example, the content source identifier may comprise a uniform resource locator.

[0012] The peripheral device may further comprise a connector configured to mate with a corresponding connector on a primary display of the computer. In various embodiments, the connector may be a threaded fastener, a clip, a joint, or an interlocking sleeve.

[0013] The housing supporting the display may have a form factor associated with a theme. The display content may be associated with the theme.

[0014] The display content may be selected based, at least in part, on a user selection. Further, the display content may comprise an advertisement. Alternatively, as mentioned above, the display content may comprise an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a social networking message such as a face book type message, or other types of content. Alternatively, the display content may comprise a notification indicating reception of any a message such as the messages described above.

[0015] In various embodiments, the peripheral device may be a computer mouse, a computer keyboard, an auxiliary monitor, or a handheld computing device. For example, the peripheral device may be an auxiliary monitor that connects to or interfaces with a connector located on the perimeter of a traditional computer display. Alternatively,

the peripheral device may be a handheld device such as a smart phone or a digital media player such as an iPod.

[0016] The memory in the peripheral device may be configured to store computer readable instructions for interacting with the peripheral device. The processor may be configured to transmit the computer readable instructions to the computer. The memory may also be configured to store a uniform resource locator (URL). The URL may be associated with computer readable instructions for interacting with the peripheral device. The processor may be configured to transmit the URL to the computer.

[0017] Another embodiment relates to an apparatus for facilitating the display of media. The apparatus may comprise a primary display, a memory, an input mechanism, and a processor coupled to the memory and to the display. The processor may be configured to receive a connection indication from a peripheral device, to obtain display content, and to transmit the display content to the peripheral device. In addition, the memory may be configured to store one or more display content options. The processor may be configured to select the display content from the one or more display content options. In one example, the processor may be configured to select the display content based, at least in part, on a user input received via the input mechanism.

[0018] The memory may also be configured to store a user display content preference,. The processor may be configured to receive a user identification, determine an association between the user display content preference and the user identification, and select the display content based, at least in part, on the user display content preference. The user identification is received via the input mechanism. Alternatively, the user identification is received via the peripheral device.

[0019] The processor may also be configured to receive from the peripheral device a content source identifier and to access a content source associated with the content source identifier. In one example, the content source identifier may be a uniform resource locator.

[0020] As described above the display content may comprises an advertisement, an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a social networking message such as a face book type message, or other types of content. Alternatively, the display content may comprise a notification indicating reception of any a message such as the messages described above.

[0021] The processor may also be configured to receive from the peripheral device an indication of a user interaction with the display content. In various embodiments, the processor may be configured to output the display content to the primary display or to determine a different content selection and to output the different display content to the peripheral device in response to the user interaction indication.

[0022] The processor may be configured to obtain display content by receiving an incoming content from a content source. As described above the display content may comprises an advertisement, an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a social networking message such as a face book type message, or other types of content. Alternatively, the display content may comprise a notification indicating reception of any a message such as the messages described above.

[0023] Another embodiment relates to a method, operating on a peripheral device, of displaying content. The method may comprise transmitting a connection indication from the peripheral to a computer, receiving, at the peripheral, a display content from the computer, and displaying, at the peripheral, the display content. The method may further comprise receiving, at the peripheral, a user input via an input mechanism and transmitting the user input to the computer. The display content may be selected based, at least in part, on the user input.

[0024] The method may further comprise transmitting an identifier identifying the display content to the computer. The method may also comprise determining a requested action based, at least in part, on the user input and transmitting an indication of the requested action to the computer. In various embodiments, the requested action may comprise displaying the display content on a primary display coupled to the computer, transmitting a different display content to the peripheral device from the computer and displaying the different content, or other actions.

[0025] The method may further comprise transmitting a content source identifier to the computer. In one example, the content source identifier comprises a uniform resource locator. The method may also comprise physically connecting the peripheral device to a primary display of the computer. In another example, may further comprise providing a housing for the peripheral device. The form factor of the device may be associated with a theme. The display content may also be associated with the theme. As described above the display content may comprises an advertisement, an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a

social networking message such as a face book type message, or other types of content. Alternatively, the display content may comprise a notification indicating reception of any a message such as the messages described above.

[0026] The method may also comprise transmitting computer readable instructions for interacting with the peripheral device to the computer. Alternatively, the method may comprise transmitting a uniform resource locator (URL) to the computer. The URL may be associated with computer readable instructions for interacting with the peripheral device.

[0027] Another embodiment relates to a method, operating on a computer, of displaying content on a peripheral device. The method may comprise receiving, at the computer, a connection indication from a peripheral device, obtaining a display content, and transmitting the display content from the computer to the peripheral device. Obtaining the display content may further comprise determining one or more display content options and selecting the display content from the one or more display content options. The method may further comprise receiving, at the computer, a user input and obtaining the display content the display content by selecting the display content based, at least in part, on the user input.

[0028] The method may further comprise determining a user display content preference, receiving, at the computer, a user identification, and determining an association between the user display content preference and the user identification. Obtaining the display content may comprise selecting the display content based, at least in part, on the user display content preference. The user identification may received from the peripheral device.

[0029] The method may further comprise, receiving from the peripheral device, a content source identifier. In this example, obtaining the display content may comprise accessing a content source associated with the content source identifier. The content source identifier is a uniform resource locator.

[0030] As described above the display content may comprises an advertisement, an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a social networking message such as a face book type message, or other types of content. Alternatively, the display content may comprise a notification indicating reception of any a message such as the messages described above.

[0031] The method may also comprise receiving, at the computer, an indication of a user interaction with the display content from the peripheral device. In various embodiments, the method may comprise displaying the display content on a primary display associated with the computer or obtaining a different content selection and transmitting the different display content from the computer to the peripheral device in response to the user interaction indication.

[0032] Obtaining the display content further comprises receiving an incoming content from a content source. As described above the incoming content may comprises an advertisement, an e-mail, a tweet, an instant message, a text message, a picture message, a video message, a social networking message such as a face book type message, or other types of content. Alternatively, the incoming content may comprise a notification indicating reception of any a message such as the messages described above.

[0033] Another embodiment relates to a display device. The display device may comprise a display, a positioning member coupled to the display, and a connector, coupled to the positioning member, and configured to connect to a corresponding connector disposed on the housing of a computer display. In various embodiments, the positioning member may be configured to extend telescopically, rotate, be deformable, or have one or more joints. The display may be configured to rotate relative to the positioning member.

[0034] The connector may comprise an anchor configured to support the weight of the display and the positioning member. In one example, the connector may be a USB connector. The connector may be configured to attach to the perimeter of a display region of a laptop, netbook, mini, PDA, handheld or to the perimeter of a desktop monitor. The connector may comprise a connection to a power source. The connector may also comprise a base and at least one support member that connects to a power source. Further, the connector may comprise at least one support member of any length. The display may comprise a peripheral device described above.

[0035] Another embodiment relates to a method of displaying media. The method may comprise providing a peripheral device described herein, connecting the peripheral device to the perimeter of a desktop, netbook, mini, PDA, handheld, or laptop monitor, and displaying media on the peripheral device. In one embodiment, the desktop, netbook, mini, PDA, handheld, or laptop may comprise an apparatus described herein.

[0036] The foregoing is a summary and thus contains, by necessity, simplifications, generalization, and omissions of detail; consequently, those skilled in the art will appreciate that the summary is illustrative only and is not intended to be in any way limiting. Other aspects, features, and advantages of the devices and/or processes and/or other subject matter described herein will become apparent in the teachings set forth herein. The summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0037] The foregoing and other features of the present disclosure will become more fully apparent from the following description and appended claims, taken in conjunction with the accompanying drawings. Understanding that these drawings depict only several embodiments in accordance with the disclosure and are not to be considered limiting of its scope, the disclosure will be described with additional specificity and detail through use of the accompanying drawings.

[0038] FIGURE 1 illustrates an example of how media can be sent from a personal computer or CPU to a display area such as a Media Screen or screens, mounted on a device.

[0039] FIGURE 2A depicts an example of a top view of a computer mouse.

[0040] FIGURE 2B depicts an example of a top and angled side view of a computer mouse.

[0041] FIGURE 3A depicts an example of a top view of a Media Mouse with a single fixed position Media Screen.

[0042] FIGURE 3B depicts an example of a top view of a Media Mouse wherein a region of the device is capable of display.

[0043] FIGURE 3C depicts an example of a top view of several versions of a Media Mouse.

[0044] FIGURE 3D depicts and example of a top view of two different images of the same Media Mouse.

[0045] FIGURE 3E depicts an example of a top and angled side view of two different images of a Media Mouse.

[0046] FIGURE 3F depicts an example of a top and angled side view of two different images of a Media Mouse.

[0047] FIGURE 3G depicts an example of a top view of a Media Mouse.

[0048] FIGURE 4A depicts an example of a top view of four different versions of a Media Mouse that has been specially configured to resemble a dog's paw.

[0049] FIGURE 5A depicts an example of a top view of two different images of a Media Mouse that exemplifies what a specially designed device, through a hypothetical licensing agreement with the rock band The Rolling Stones, can look like.

[0050] FIGURE 6A depicts three examples of images depicting a top view of a computer peripheral often referred to in this application as a Media Keyboard.

[0051] FIGURE 7A shows three examples of images depicting a frontal view of a computer peripheral often referred to herein as a Media Monitor.

[0052] FIGURE 8A shows four examples of images depicting a frontal view of a device that is often referred to in this application as a Media Mate.

[0053] FIGURE 9A shows three examples of images depicting a Media Mate.

[0054] FIGURE 10A shows two examples of different views, a side and a frontal, of another embodiment of a Media Mate.

[0055] FIGURE 11A shows an example of a top view of two different versions of a Media Mate as a mouse pad.

[0056] FIGURE 12A shows four examples of different images of a device that is often referred to in this application as a MediaBook.

[0057] FIGURE 13A shows an example of a frontal view of a MediaBook in the "open" position.

[0058] FIGURE 14A depicts two examples of images, both frontal views, of a Media Monitor.

[0059] FIGURE 15A shows three examples of top view images of a MediaBook, two of the device in the "half open" position and one in the "closed" position.

[0060] FIGURE 16A shows four examples of different images of a MediaBook in the "half open" position.

[0061] FIGURE 17A shows four examples of devices with different sized and shapes to the corresponding Media Screens of said devices.

[0062] FIGURE 18A shows three examples of devices that can connect directly to another device, which can be its power source.

[0063] FIGURE 19 is a diagram showing examples of a possible architecture to support multiple displays and devices that include multiple functions.

[0064] FIGURE 20 is a diagram showing an example of one possible design for a media device account management system.

[0065] FIGURE 21 shows four examples of devices that can connect directly to another device, which can also be its power source, for the purpose of display.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0066] In the following detailed description, reference is made to the accompanying drawings, which form a part hereof. In the drawings, similar symbols typically identify similar components, unless context dictates otherwise. The illustrative embodiments described in the detailed description, drawings, and claims are not meant to be limiting. Other embodiments may be utilized, and other changes may be made, without departing from the spirit or scope of the subject matter presented here. It will be readily understood that the aspects of the present disclosure, as generally described herein, and illustrated in the Figures, can be arranged, substituted, combined, and designed in a wide variety of different configurations, all of which are explicitly contemplated and make part of this disclosure.

[0067] Generally, embodiments described herein relate to at least one extra display device that can be included with or built into laptop computers, at least one display device built into computer systems, at least one display device built into computer peripherals, display devices as peripherals themselves, and methods for transmitting media to said devices as well as functionality for the computers that include such devices and the for the devices. In some embodiments, the devices, systems, and methods specifically can exclude as an "extra" display the primary display of the device, for example the computer monitor or monitors.

[0068] Some embodiments relate to a device where the overall design allows said device to retrieve, store, transmit, project, display and play various media including, for example, but not limited to: images, designs, colors, digital content, patterns, computer files, text, slideshows, video, moving images, software applications, audio, images that integrate sound, artwork, broadcasts, streaming content from an Internet

source, static content from an Internet or file source, content from a specific partner or designated application source, content from a video game console source, content from a personal computer source, content from a cellular phone, content from other computing devices, and other related and like data.

[0069] The devices can permit a user to insert, decorate, or personalize their peripheral(s) or media enabled area(s) such as a Media Screen or screens with media of their own choosing, including for example, media that can be delivered from an Internet source or stored in common computer files such as a GIF, JPEG, BMP, WMV, MOV, AVI, MPEG, TIFF, or documents from MS Word, MS Excel and other applications.

[0070] The Media Screen or screens and/or display enabled areas can be in any desired shape, including for example, square, rectangular, circular, triangular, spherical, cubic, pyramid shaped, diamond shaped, star shaped, mounded, tetrahedral, oval, elliptical, trapezoidal, shaped as a parallelogram, five sided, six sided, seven sided, eight sided, nine sided or ten sided or constructed in unique shapes that fit with the design of the larger device. The screen or screens can be designed and configured to permit the use of any suitable display technology, including for example, liquid crystal display (LCD), light-emitting diodes (LED), organic light-emitting diodes (OLED) technology or other projection/display transmission technology, including technology fashioned from materials that include one or more of glass, plastic, plasma, organic molecules, organic compounds, polymers and/or other projection/display capable materials or components that can facilitate display in an active or a passive matrix or other form of visual display. These and other embodiments will become readily apparent to those skilled in the art from the following detailed description of the embodiments having reference to the attached figures, the invention not being limited to any particular embodiment(s) disclosed.

[0071] In FIGURE 1, the term "display enclosure" refers to a peripheral device such as the Media Mouse, Media Keyboard, Media Monitor and/or Media Mate. FIGURE 1 illustrates a personal computer (PC) 105. It will be appreciated that a personal computer is used for explanatory purposes, but that other computing devices such as mobile telephones, smart phones, or other types of computing devices may be employed. The PC 105 includes a processor 107. The processor 107 may be configured, as described below to facilitate the use of peripheral devices in displaying content to users. The processor 107 is coupled to a memory 109. The memory 109 may be configured to store

computer executable instructions for enabling the various methods and processes described herein. Further, the memory 109 may be configured to store various forms of media for display on one or more devices, including for example, one or more peripheral devices as described herein. In another embodiment, as described below, the memory may be used to store user preferences for content and/or broadcast selection and may facilitate the association of particular content and/or broadcasts with particular users or particular peripheral devices. The processor 107 further may be coupled to an input device 111. As described below, the input device 111 may facilitate user input and various content selection schemes. It will be appreciate that the functionality of the user input 111 may be also be implemented in one or more the peripheral devices described below. The processor 107 may also be coupled to a primary display (not shown). As described herein, the primary display may be used in conjunction with the one or more peripheral devices or other devices. The PC 105 may also communicate with one or more content sources 131. As described below, the content source 131 may comprise a server on the Internet, physical media accessible by the computer, or other sources of information.

[0072] FIGURE 1 also illustrates a pair of exemplary peripheral devices, the mouse 115 and the keyboard 119. Each of the peripherals 115, 119 may function according to its traditional capabilities in addition to the beneficial features described herein. Each of the peripheral devices, 115, 119 may include, for example, a processor 121. The processor may be configured to facilitate both the traditional functionality associated with the peripherals as well as the additional functionality described herein. Similar functionality may be implemented by software running on the processor 107 of the PC 105. This may include, for example, multiplexing of signals or other signaling schemes for communicating with the PC 105. As described below, the processor 121 may be configured to receive and transmit content and other information from and to the PC 105 via a link 117. It will be appreciate that the link 117 may be configured as any of a variety of communication links such as USB, RS232, PS2 or a wireless link. The peripheral devices 115, 119 further comprise a memory 123. As described below, the memory 123 may be configured to store content to be displayed, content source identifiers, computer executable instructions for interacting with the peripheral, and other types of information to facilitate the processes described herein. The processor 121 may be further coupled to a display 125. As described below, the display may be shaped or

configured to fit a particular peripheral device or the display and the peripheral device may be shaped according to a particular theme. The processor 121 may be further coupled to an input device such as the input device 127 of the keyboard 119 or the input device 129 of the mouse 115. The input devices, 127, 129 may be configured to receive user interaction with the peripheral devices, 119, 115. As described below, the received user interaction may be used to affect the content being displayed on the display 125. Alternatively, the inputs 127, 129 may be used to trigger actions by the personal computer 105 described below. For example, a user input via the input 127 may be transmitted to the processor 121. The processor 121 may transmit the user input along with an indication of the current content being displayed to the PC 105 via the link 117. In response, the PC 105 may display the current content on a primary display or may determine an alternative display content to transmit to the peripheral device 119.

[0073] For the purpose of explanation, it may be useful to consider the operation of the systems illustrated in FIGURE 1. For example, a user may connect the PC 105 and the keyboard 119 via a link 117, such as a USB wire. The PC 105 and the keyboard 119 may exchange one or more connection initiation messages to establish a connection. The PC 105 may then proceed to determine an appropriate display content for the keyboard 119. In one example, the PC 105 may receive an indication from the keyboard 119 requesting content from a particular content source 131. In another example, the PC 105 may receive an input from the keyboard 119 or via the input device 111 that a particular user is using the keyboard 119. In response, the PC may determine a different content source 131 or particular content, by accessing the memory 109. The PC may also select content for the keyboard 119 in other ways described below. In one specific example, the PC 105 may determine that the keyboard will display e-mail reception notifications. Thus, each time the PC 105 receives an e-mail from a content source 131, it can output an indication of the e-mail receipt to the keyboard 119 via the link 117. This indication may be pre-processed by the PC for display at the keyboard 119, or may be left unprocessed for further processing at the keyboard 119. After receiving the indication, the keyboard 119 outputs the indication to the display 125. A user, may then interact with the indication via the input mechanism 127. For example, the user may press a button indicating that she would like to view the e-mail on the primary display associated with the PC 105. Alternatively, the user can view the e-mail on the display for the peripheral device. If the user desires to view the e-mail on the display associated with

the PC 105, then the keyboard 119 may transmit the user request, and possibly an identifier identifying the particular message, back to the PC 105 via the link 117. The PC 105 may then display the e-mail on the primary display.

[0074] It will be appreciated that the memory elements 109, 123 may include, for example, processor cache, including a multi-level hierarchical cache in which different levels have different capacities and access speeds. The memory elements 109, 123 may also include, for example, random access memory (RAM), other volatile storage devices, or non-volatile storage devices. The storage may include hard drives, optical discs, such as compact discs (CDs) or digital video discs (DVDs), flash memory, floppy discs, magnetic tape, and Zip drives. The memory elements 109, 123 may also include, for example, video buffers.

[0075] One or more of the functional blocks and/or one or more combinations of the functional blocks described with respect to the PC 105 and the peripheral devices 115, 119, such as the processors 107, 121 may be embodied as a general purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic device, discrete gate or transistor logic, discrete hardware components, or any suitable combination thereof designed to perform the functions described herein. One or more of the functional blocks and/or one or more combinations of the functional blocks described may also be implemented as a combination of computing devices, e.g., a combination of a DSP and a microprocessor, a plurality of microprocessors, one or more microprocessors in conjunction with a DSP communication, or any other such configuration.

[0076] It will be further appreciated that while the peripheral devices 119 and 115 were described as a keyboard and mouse, other devices, including peripherals such as a MediaBook, PDA, handhelds, video game console, video game peripheral such as a joystick, home electronic devices such as a television or stereo, and other devices may implement similar functionality.

[0077] FIGURE 2A shows a top view of a computer mouse according to an embodiment, where three regions or quadrants 101, 102 and 103 are clearly visible. A fourth quadrant 104 is marked and denotes the front area of the device, the piece that curves away from the top towards the base that runs flush to the surface such as a tabletop.

[0078] FIGURE 2B provides a top and angled side view of a computer mouse, where sections 201, 202, 203 and 204 can be identified separately.

[0079] FIGURE 3A is a top view of a Media Mouse according to a further embodiment, shown after it has downloaded a popular image, Daffy Duck, to a display screen, AKA Media Screen, which has been embedded in a fixed position in the main body of its shell.

[0080] FIGURE 3B is a top view of a computer Media Mouse according to a further embodiment shown after it has downloaded a popular image, Daffy Duck, to a region 303 on the device wherein the entire region is capable of display, i.e. in this embodiment, download and display is not restricted to an embedded, framed Media Screen. The construction of the device is made of a surface that can display media where the other defined regions 301 and 302 can be capable of display as well. Region 304 refers to the very front of the device, the piece that curves away from the top towards the base that runs flush to the surface such as a tabletop. In some embodiments, display can occur in region 304 as well.

[0081] FIGURE 3C is a top view of several versions of a Media Mouse that demonstrate different capabilities and configurations of an embodiment with a fixed position Media Screen embedded into its shell. The first device 305 is at rest prior to having received any images for download. The second device 306 has only received the image of Daffy Duck. Device 307 has received the image of Daffy Duck and is also constructed of a colored plastic, as represented by the shaded areas, in all of its external visible regions. Device 308 has a speaker located at the bottom of the device, meaning that it can play music and or video accompanied by audio and/or broadcast media featuring video and/or audio. While the depicted device is described as having a speaker at the bottom, it should be appreciated that one or more speakers can be included at any other location on the devices. A Media Mouse can also be a peripheral device where a display located on said device can identify a user to a computer system by biometric scan. For example, in image 305 the Media Screen can be an interface such as a biometric scanner that reads a user's thumbprint where that can be equivalent to a "login" identifier to the computer system. In some embodiments, the biometric or identity scanning device can be plugged into other universal computing units and configure the unit to the user's preferences, files and personal information. In other embodiments, the Media Screen could feature a touch-screen command that allows users to send a command directly from

the Media Screen to the main monitor in its own prioritized browser. For example, this could be an e-mail, text message or some other response driven form of content.

[0082] FIGURE 3D is a top view of two computer mice that demonstrate the capabilities of the Media Mouse that was displayed in FIGURE 3B. Device 309 is a "before" where the device has not been designed or assigned images to its display capable regions numbered 1, 2, 3 and 4. The device depicted in picture 310 is "after" the device has been designed and/or assigned downloads, for example, different colors as represented by shading to regions 1, 2, 3 and 4. The humpback region, or quadrant 3, can be assigned, for example, the color orange. The left click area or quadrant 1 can be assigned the color blue. The right click area, or quadrant 2, can have the color green downloaded to it and the front section, or quadrant 4, can be purple. Of course, not all of the quadrants have to be assigned a color. They can display other media.

[0083] FIGURE 3E is the embodiment from FIGURE 2B but in a "before and after" scenario whereby the image 311 is the "before" any media has been assigned or downloaded to it and image 312 is the "after" where media, as indicated by the shaded areas, was assigned via relevant communication to the four display capable regions numbered 1, 2, 3 and 4 of the device.

[0084] FIGURE 3F is the same embodiment from FIGURE 2B, but with different display capable regions displaying content as indicated by the shading. In image 313, quadrants 1 and 2 have shading, which indicates that the user decided to download media to these two areas on the Media Mouse. In image 314, two different regions have been assigned media for display. The device, as depicted in both 313 and 314, shows that media can be displayed on four different quadrants, but that the user can choose to not display on all available display areas.

[0085] FIGURE 3G is an embodiment of the Media Mouse where the device has received a download of a "smiley face," where the shaded areas represent the background color yellow that accompanies the image, to all four display quadrants, 1, 2, 3 and 4, or its entire visible external space, an option the device user can choose in its account management software. The downloaded image can be assigned, for example, to appear as a separate image in each region, restricted to appear in a specific region or it can also be assigned as one image appearing across any combination of the display capable regions.

[0086] FIGURE 4A is a top view of four different versions of a Media Mouse that has been specially configured to resemble a dog paw with a display capable screen, or Media Screen, embedded in its main body. Image 400 is the device "before" an image has been downloaded to its Media Screen. Image 401 is the device "after" the device owner has downloaded a picture of her St. Bernard dog, 'Mimosa,' onto the device's Media Screen. Image 402 is the device with an embedded Media Screen and surrounded by colored plastic as represented by the shaded area in order to enhance the visual appeal. Image 403 shows two other features of the device: more coloring added to the external surface in area 405 and a speaker 404 that is camouflaged as a paw pad. In some embodiments of this device, 'Mimosa' the St. Bernard can be programmed to bark when a user identified event such as an appointment or calendared milestone such as a meeting occurs or when an e-mail arrives in the operator's Inbox. The bark can come out of a speaker or sound system found on the Media Mouse itself or via integration of the Media Mouse device into the sound system of the main computing apparatus/CPU. The Media Screen in the devices depicted in FIGURE 4A can also display non-canine media. Additionally, further embodiments of the Media Mouse can have different external shells that reflect other recognizable shapes that can thematically personalize a device. This and all other embodiments can also broadcast media from content providers as well. For example, this type of device could be given away at Petco Park, home of the San Diego Padres as part of a promotion where the device could also broadcast Padres baseball games (and related content) in addition to transmitting media from Petco and their vendors such as Iams. Other sounds can be used as desired, including sounds that relate to the displayed media or with the shape of the device. For example, if the device were in the shape of an automobile, then the sound might be the sound of an engine, a horn, etc. Similarly, if desired, different sounds can be assigned for different events or types of media.

[0087] FIGURE 5A is a top view of a Media Mouse that exemplifies what a specially configured mouse, through a hypothetical licensing agreement with the rock band The Rolling Stones, would look like. Image 501 is a "before" picture, not drawn to scale, where the light and dark shaded regions represent the colors red and black respectively, 502 is the left click quadrant, 503 is the right click quadrant, 504 is the main body of the device that contains the embedded display or Media Screen 505 that receives media downloads that can are enabled for sound with speakers 506. Image 507 is the

"after" version that has been blown up where an image of lead singer Mick Jagger has been downloaded and appears on the device's media enabled screen 505. In one embodiment, the non Media Screen aspect of the Rolling Stones branded device can be in traditional red, white and black plastic of the logo surrounding the Media Screen. In yet another embodiment, the whole device can be capable of projecting images and the red, white and black portions are simply projections or transmissions of colors for display. In this type of promotional arrangement, the designated device(s) can benefit from special considerations with respect to accessible content, in addition to promotional and media inventory. Similar to the dog paw and other embodiments described above, sounds can be used to designate the occurrence of an event, for example, music or other audio related to the event and/or nature of the peripheral (e.g., Rolling Stones music).

[0088] The display technology can also be applied to the keyboard environment in a product referred to as the Media Keyboard, where areas such as the frame of the computer keyboard can be configured to receive and display media content on a Media Screen or screens. FIGURE 6A features embodiments of a Media Keyboard. The first image 601 shows a Media Keyboard before it has been assigned a media download in either of its two Media Screen areas, numbered 1 and 2. Image 602 shows a Media Keyboard adorned with a couple of downloaded images in the depicted Media Screen areas: the famous STP logo to Media Screen, 1, and the familiar number three that adorned Dale Earnhardt's famous racecar to Media Screen, 2. Image 603 demonstrates the background download option whereby a user operator can send an image to the device as a background download, in this case, Hall of Fame driver Richard Petty's renowned #43 Plymouth. This capability means that the Media Keyboard can transform its main body with a background display feature that downloads media to the device without blurring the actual key designations. In other words, this background display feature spreads the image over a large part of the keyboard device, including the actual keys, without obscuring their designated denominations so that the desired media appears, but it does not overwhelm the device, obstruct the keys, hinder or diminish keyboard operation in any way. As in other embodiments, the Media Keyboard can have a Media Screen or screens that can slide out from any of the four sides of the main apparatus like a cartridge release Media Screen depicted in other devices, such as the MediaBook in FIGURE 12A. This means that the Media Screen, or screens, can be hidden from view, but once deployed, the user's desired media can then be activated for enjoyment or utility purposes. In yet

another embodiment, a screen can be attached to an outlet built into the frame of a Media Keyboard, i.e. plugged into the device for powering and fixed position display, even with the capability to angle, or adjust it, towards the user. In short, the Media Keyboard enhances personalization opportunities as well as content provider distribution opportunities in association with a desktop computer or attachment to a docking station device or laptop computer. In yet another embodiment, a Media Keyboard can have a Media Screen with the biometric scanning capabilities in order to identify a computer user and allow the user access to a computer system and further embodiments could have the touch-screen capabilities that allow a user to select that communication for immediate priority on the main monitor of the computer system by simply touching it.

[0089] FIGURE 7A shows three images of an embodiment of a computer peripheral frequently referred to in this application as a Media Monitor. Image 701 shows a Media Monitor before any items have been downloaded to its nine Media Screens, numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9. The bottom two images, 702 and 703, show the device after some images have been downloaded to various Media Screens. Image 702 shows a nature or animal theme and image 703 reflects a sports theme. As shown, users can display images on some enabled Media Screens on the Media Monitor but not on others. This offers a user the choice to segment or compartmentalize the functionality to their choosing. The Media Monitor can, in some embodiments, take moving images and place them in stationary places or send information or images around the perimeter of the monitor in moving, real time sequence. For example, a news ticker, or stock ticker, can travel around a Media Monitor's frame if the monitor screen was framed by sufficient media display materials or components, in essence a Media Screen encircling the majority or entirety of the monitor screen. This frame enabled capability to encircle a Media Monitor can also be integrated into other devices. In yet another embodiment, a Media Monitor can have a Media Screen with the biometric scanning capabilities in order to identify a computer user and allow the user access to a computer system or to access a particular application via touch-screen capability.

[0090] FIGURE 8A shows frontal views of various embodiments that a Media Mate can take. Image 801 shows a four-sided Media Screen framed by curved sides and a flat top and flat bottom. Image 802 shows a triangular frame with embedded rectangular screen. Image 803 shows a device with an oval frame and oval display screen. Image 804 is specially designed as a heart shaped frame where the shading, 1, represents red plastic

or a display that can light up in red, with a rectangular Media Screen embedded in the device. The Media Mate devices, as depicted here, feature sufficiently flat thick bases and flat backs that can be in the range of approximately one half of an inch to twelve inches to support it in the positions shown here, i.e. perpendicular to a flat surface, or lying on a flat surface, such as a desk or tabletop. The proposed Media Mate device, or devices, can complement, augment, integrate with, or act entirely separate from the Media Mouse, Media Keyboard, Media Monitor and MediaBook. It can take many shapes, such as a freestanding picture screen or frame or even a traditional paperweight, meaning that it can stand perpendicular on, or lie parallel to, a traditional tabletop surface. Some Media Mate devices can also have a hidden command, or keyboard command system that can be concealed and deployed for use, such as a clamshell design. As indicated by the heart design in image 804, Media Mates can feature thematic designs of animate or inanimate objects to enhance the personalization choices for consumers and customer offerings for manufacturers and content providers. Additionally, there can be Media Mate embodiments having a Media Screen with biometric scanning capabilities that identify a computer user and allow the user access to a computer system and, in some embodiments, touch-screen capability.

[0091] FIGURE 9A shows three images of a Media Mate. In image 901, the device is standing on its base, perpendicular to a surface such as a tabletop, and has a flower picture on its Media Screen. In image 902, the same Media Mate device is lying down, flush on a surface such as a tabletop, with a St. Bernard picture on the screen. The pictures 901 and 902 show that the same device can be deployed in either position as various embodiments can have the dual capacity to be perpendicular to the surface, or lying upon it, as the backside, as in this instance, can be flat and flush to the tabletop surface. Image 903 shows the side view of the same device lying down, flush on a surface such as a tabletop, where the outline of the screen is visible, but there is no image depicted on it. Some embodiments can also have frame stands on the back side of the device, either embedded in them so as to not inhibit their ability to lie flat on their back sides, or attached so the position standing upright, or perpendicular, to a horizontal tabletop surface, is the preferred deployment. Also, embodiments of a Media Mate can have a display wherein the display can identify a user to a computer system by biometric scan. The identification can then act as a "login" for the user to a computer.

[0092] FIGURE 10A shows two views of a different embodiment of a Media Mate. Image 1001 depicts a side view of the Media Mate that has a flat base where the Media Screen is angled from back to front towards the user when the device lies with its base flush to a surface, almost like a wedge. Image 1002 shows a frontal view of the same wedge-like Media Mate. In some embodiments, the angle can be adjusted, i.e. tilted, by the user via a control. Furthermore, in some embodiments, the Media Screen can be removed for cleaning and/or replacement if necessary. The base can be of solid, or of hollow, construction and have control buttons, concealed or exposed, located upon it.

[0093] FIGURE 11A shows how a Media Screen can be embedded in a mouse pad, or, in other words, how a Media Mate can be a mouse pad. In this application, the Media Screen is built into the mouse pad itself, embedded at one end of a pad, which can be made of rubber, synthetics, cloth, plastic, silicon in their relevant combinations to assist in the tasks associated with mouse operation, such as providing a sufficient horizontal surface for a pointing device such as a Media Mouse to slide over and scroll against. Image 1101 shows a screen with a picture of a 'smiley face' on it set at the top of the mouse pad where the screen is angled from back to front, or towards the user. Image 1102 shows the same picture of a 'smiley face' except the screen is not angled; it lies flat and flush to the surface of the mouse pad. In some embodiments, an entire mouse pad can be capable of receiving and displaying media and the mouse can slide over and scroll against the surface. Like other devices described herein, the embodiments depicted in FIGURE 11A can be battery powered, communicate wirelessly, or powered via a connective cable such as USB and display media essentially consisting of but not limited to: images, designs, colors, digital media, patterns, computer files, text, slideshows, video, audio to a sound system engineered into the device, integrated sound with the host computer apparatus/CPU, artwork, broadcasts, streaming content from an Internet source, static content from an Internet or file source, content from a specific partner or designated application source, content from a video game console source, content from a Personal Computer source and other related data.

[0094] FIGURE 12A represents two of the ways that the expanded media capabilities can be implemented in a MediaBook. For example, a MediaBook can have an embedded cartridge Media Screen as depicted in images 1201, 1203, 1204, and a fixed position Media Screen or screens on its interior as shown in image 1202 when the device in the "open" position. The embedded cartridge version means the display Media Screen

or screens can be stored inside the housing of the device much like a CD ROM or DVD drive and deployed by the user pressing a release button, or similar mechanism. In other words, the MediaBook can be computer laptop having at least one transversal hole in a midsection thereof wherein at least one extra display can be stored and deployed to a position visibly advantageous to the user. In some aspects, the Media Screen cartridge can be located on the top or monitor half of the MediaBook. In some other instances, the cartridge can even be located on the bottom or keyboard half of the MediaBook from where the Media Screen deploys. In some embodiments, the Media Screen can adjust to angle advantageously towards the user via a hinge or similar mechanism after it has been deployed. In some other MediaBook embodiments, a user can also fold the Media Screen elements out from an 'at rest' inset position built into the MediaBook's encasement, or connect a Media Mate to a prefabricated slot to the unit or slide-on a Media Screen attachment to the computer itself. Additionally, other devices such as a Media Mouse or Media Mate can be connected to, and powered by, the MediaBook via a cable or wire such as Universal Serial Bus and communicate wirelessly via a standard such as Bluetooth®.

[0095] In FIGURE 12A, image 1201 is an "open" MediaBook device that demonstrates the flip-out, or cartridge released, Media Screen or screens that can receive and display media. Image 1201 depicts three favorable areas, ones that correspond to the three flower drawings, from where the Media Screen cartridge can be released, or flipped out from a cavity within the device. As shown, the three Media Screens in image 1201 can be advantageously deployed for visual purposes from the top, right and left side of the half of the laptop that feature the monitor screen, commonly referred to as the "top half" of the open laptop. Image 1201 demonstrates how the display capabilities can be helpful in those instances where an individual is looking at reference material on a deployed Media Screen or screens that can facilitate, impact and/or influence work such as language translation, viewing an instructional tutorial or transcribing meeting notes to a file on the main monitor screen of the MediaBook. As shown, a MediaBook can have more than one Media Screen. In cases of MediaBooks with multiple Media Screens, the user can pursue multiple tasks simultaneously, e.g. file work, broadcasting content, conducting two-way conversation and displaying reference information.

[0096] In FIGURE 12A, image 1202 is an "open" MediaBook device that shows eleven places, numbered 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 and 11, where an embedded

Media Screen can appear on the device. In some embodiments, a MediaBook can feature both a flip-out or cartridge released, Media Screen or screens deployed from the top half of the open device as depicted in image 1201 and an embedded Media Screen or screens elsewhere on the open device, such as in ones depicted in image 1202. Additionally, in some instances, Media Screens can be cartridge released from the bottom half of the MediaBook laptop computer and have embedded Media Screens on parts of the device. Additionally, versions of MediaBooks can be equipped with a Media Screen having biometric scanning capabilities in order to identify a computer user via a thumb or finger print and allow that user to "login" to the computer system or otherwise access the device. Furthermore, the aforementioned touch-screen capabilities can also apply to Media Screens found in various MediaBook embodiments.

[0097] In FIGURE 12A, images 1203 and 1204 show a closed MediaBook laptop computer that has the cartridge based Media Screen technology wherein the cartridge released Media Screen or screens are contracted into the device. Image 1203 shows a frontal view of a closed MediaBook where the Media Screen is contracted into the top-half of the device, specifically on the top side of the top half when the cartridge Media Screen is released by a button, much like a CD Rom/DVD drive, in the "open" position. Image 1204 shows a MediaBook with a cartridge/insert Media Screen on one of the sides of the device in the contracted position. It, too, has a release button that allows the Media Screen to spring out to the side of the monitor half, or top half, of the laptop computer when being operated. The release button can be a spring-loaded mechanism, or some other tension driven lock and place system conventionally found in similar systems such as a CD ROM or DVD drive. One of the purposes of the cartridge/insert Media Screen, aside from providing elegant media display capabilities, is to protect the Media Screen when not deployed in a space-efficient manner. Like the other devices, the MediaBook's Media Screen or screens can display media essentially consisting of but not limited to: images, designs, colors, patterns, computer files, text, slideshows, video, moving images, software applications, audio, images that integrate sound, artwork, broadcasts, streaming content from an Internet source, static content from an Internet or file source, content from a specific partner or designated application source, content from a video game console source, content from a Personal Computer source and other related data.

[0098] FIGURE 13A shows an open laptop computer embodiment, a MediaBook, where there is a camera lens inserted into the top portion of the laptop so that it can transmit the image of the person using the laptop and possibly send it to a similarly enabled device elsewhere in order to enhance a conversation that two individuals can conduct via the Internet. The cartridge released, or flip-out, Media Screen that appears at the top of the picture shows the person that the computer operator is speaking to in this hypothetical example. Some devices, such as the Media Monitor, MediaBook and Media Mate, can also include an embedded camera element that can facilitate enhanced two-way conversation or correspondence. In these instances, the camera can capture the images in its field of data capture and send the information to a target destination, including where a Media Screen or screens can project those images via a special application or software program. Simultaneously, the individual can display on his/her Media Screen the images captured by the other person's camera or video capture element meaning that the two individuals can be engaged in conversational broadcast. These two-way capabilities can facilitate correspondence with an individual, group, or larger "chat" session with individuals who have devices and/or programs with similarly enabled media capabilities. The cartridge released, or flip-out, screen can also be deployed from the side of the device in certain embodiments. The camera can also be integrated elsewhere into the device, it does not have to be in the middle of the top half of an open laptop computer and it can also be part of another attachment such as a Media Mate. The camera can also be used as an identifier of a computer system operator, meaning that the camera element can scan a user's face in conjunction with, or separate from, a Media Screen that reads a thumb, or finger, print.

[0099] FIGURE 14A shows two images of a Media Monitor. Image 1401 shows a standard desktop Media Monitor with three places Media Screens can be, such as the top and the two sides, positions that correspond to the numbers 1, 2 and 3 in image 1401. These Media Screens can be cartridge inserts, flip-out models, or attachments that are plugged into prefabricated slots. Certain embodiments can feature camera technology for transmitting images elsewhere, such as positions 4, 5 and/or 6 in image 1401. Image 1402 shows a larger depiction of a desktop Media Monitor that can have one, two or three Media Screens. Some Media Monitors can have embedded fixed position Media Screens in addition to cartridge released ones. Also, in some embodiments, a cartridge release Media Screen, flip-out Media Screen or embedded Media Screen can be affixed on, near

or at the bottom portion, which is the side facing the user/operator closest to the base of the Media Monitor to display media.

[0100] There can be other embodiments of a Media Monitor. For example, a Media Screen can be attached to a prefabricated outlet, such as a USB, built into the frame of a Media Monitor, meaning that it plugs into the device for powering, connectivity and fixed position display. In some embodiments of this attachment type configuration, the Media Screen can be affixed at the end of an extension apparatus that either be straight, angled or bendable where some can communicate wirelessly and others are powered via the said apparatus. The extension apparatus can feature at least one post that connects into the host device and it can be of any length from one quarter of an inch to ten inches in total length or any value in between. In some embodiments, the extension apparatus can even be telescopic, where the user can vary the length and even angle of the connected Media Screen. In yet another embodiment, a special Media Mate can be externally attached to a regular computer monitor, or other place in and around someone's desk, workstation or place of computing by a clip, sleeve or interlocking attachment system that allows for a device to be affixed to something at an individual's discretion. These items can communicate wirelessly or via a cable or wire to the CPU or main computing apparatus. There can also be Media Monitor devices, for example in the flat screen category, where the Media Screen or screens are either the cartridge release type or 'flip-out' from a hinged position behind the main computer monitor for viewing.

[0101] FIGURE 15A shows three images of a computer laptop, a MediaBook, enabled with a Media Screen on the exterior of the device's encasement. Image 1501 shows a top view of a closed laptop that has a "$100 Rebate" on its Media Screen. This can be the manner in which a manufacturer sends a unit to a retailer, or the way a retailer displays the unit for sale, in order to attract attention to it on the shelf. Image 1502 shows a top view of a half open MediaBook laptop with the logo of a manufacturer, Dell, that hypothetically licensed the Media Screen technology to, among other things, place a Media Screen on the outside of a laptop to light up their corporate logo. Image 1503 shows a top view of a non-manufacturer branded MediaBook that is in the half open position. It has a Media Screen on the external, outside encasement and the user has downloaded a Superman logo to it. The three images, 1501, 1502 and 1503 all demonstrate that Media Screens can appear on the outside of a MediaBook for the purposes of media display and can be embedded anywhere on the outside of the device in

one, two, three, four, five, six or more places. Externally mounted Media Screens can be inserted flush to the surface, or they can be inset, or sunk below the hard plastic or protective external surfaces of the MediaBook, in order to protect the screen from getting heavily scratched in usage, transportation and normal wear and tear. Alternatively, some embodiments can feature an externally mounted Media Screen that can be slightly raised to enhance its prominence. Furthermore, some embodiments can even have an adjustable Media Screen where it can be raised or lowered with respect to the surface of the frame from where it is placed. Lastly, the Media Screens in the image 1501 and 1503 show a different orientation, or rotation of the image, than the image 1502. Specifically, assuming that the word 'rebate' is closest to the hinge mechanism side of the computer laptop, the top of the image of the Dell logo, image 1502, differs by 180 degrees of rotation from the Media Screen in image 1501. In other words, and as noted elsewhere in the application, media can be rotated or oriented in any direction by the user's command or discretion for placement on a Media Screen or screens.

[0102] FIGURE 16A shows four top view images of a half-open MediaBook. Image 1601 shows nine different places, numbered 1, 2, 3, 4, 5, 6, 7, 8 and 9, where a Media Screen or screens can be placed, inserted and/or embedded for the purposes of media display on the most visible part, or top half or cover of the external encasement of a MediaBook. Image 1602 shows four different places, numbered 1, 2, 3 and 4, where a Media Screen can be placed on the rear side of the lower half of a MediaBook. These Media Screens shown in image 1602 can be used for several purposes of media display/play/projection, including name identification or ownership designation such as product serial numbers and other data that relate to the origin of the device and/or its owner's or issuer's identity. Image 1603 demonstrates that in some embodiments, the majority of the MediaBook's external shell or encasement can display images, colors and or media; in this case the Hewlett-Packard logo. It also has an identifier Media Screen, saying "ID Here," in the side corner of the lower half on the rear of the device. Image 1604 shows another way Media Screens can be deployed for the purposes of identification, where an e-mail address, "JohnDoe@apple.com," is listed on the rear mounted Media Screen located on the backside of the device, a device (1604) that has a Media Screen on the top external half that is built and can illuminate an image or images of choice, in this case the Superman logo and a star design above it. Also, the Media Screen or screens deployment/placement possibilities of the MediaBooks shown in image

1601, 1602, 1603 and 1604 can be configured in any of their possible combinations in an embodiment or embodiments of the MediaBook. One potential device can have as many as twenty or more screens integrated both inside and outside the MediaBook. For example, a Media Screen or screens can be affixed in the regions surrounding the MediaBook's keyboard, monitor screen, on both sides of the outside cover of the device, the area on the rear of the device where it hinges open and closed and the three other sides one can see when the MediaBook or laptop device is closed. Further, the majority or entirety of the frame that one sees when the laptop is open around the monitor screen can come alive with various media, assigned downloads or streaming content from a selected or designated provider, such as in the case of a device branded and issued by a particular entity like Marvel Comics.

[0103] As described, elements of the images 1602, 1603 and 1604 demonstrate that a Media Screen can serve as an identifying marker for an individual device owner, or device issuer such as a company or any type of brand. The identifier Media Screen can be secreted to a remote spot, such as the bottom of a device, or displayed prominently such as on the top, or most disposed, side of a device. The Media Screen or screens used for this purpose can be dimmed, or turned off, so that the name and/or identifying information is not permanently illuminated, or only illuminated by the device owner's choice, or special command key. As in other embodiments of the devices, the Media Screen can be as small as a ¼ inch by ¼ inch and up to sizes that have dimensions one inch, two inches, three inches, four inches, five inches, six inches, seven inches, eight inches or longer. As in other applications, the Media Screen or screens for display can be of any shape and they can be raised, inset, or offset to the surface of the device to facilitate placement. In some cases, it can have associated audio capabilities that are activated via the account management system, special command, or command key. The Media Screen or screens can even blend into the design of the device so that the identity of the Media Screen is concealed when not illuminated. The user can power their display Media Screen or screens via the unit's battery, or, in some embodiments, this identifier Media Screen can have a separate dedicated battery that is concealed in the MediaBook but which can be recharged when the laptop unit itself is drawing power from an external electric source such as a wall socket. In addition, there can also be a special connection, button, command key or insert hole where someone can activate the identifier Media Screen or screens without having the benefit of available power to the rest of the

device. This independent and/or special circumstances activation access can potentially allow an individual to determine the owner, issuer or an entity in charge of the device for the cases when the identity of the device is not clear. Identifier information, in some aspects, can be password protected or encrypted so that its contents can only be accessed, changed or altered by the owner of the device. This protected identification attribution can be done in the account management system, software installation/set-up, by the issuer, manufacturer or any appropriate party in the chain of sale or custody of the device.

[0104] Image 1603 in FIGURE 16A demonstrates that the Media Screen technology can be licensed to other manufacturers for the purposes of resale, bundling or other commercial concerns. In such instances, the devices can be branded according to the specifications of the customer with respect to logo placements, lettering, features or matters of customization or branded content distribution. For example, Hewlett Packard can license the technology and outfit their products with Media Screens that feature their logo or manufacture Media Screens in the shape of their logo and install them on a device or devices. In this hypothetical relationship, Hewlett Packard can manufacture a MediaBook laptop computer that has an externally mounted Media Screen that is in the shape of their HP logo that illuminates when powered and on the inside of the same laptop computer, the user can have access to a cartridge released Media Screen and also a Media Screen or screens that are embedded in the inside frame of the laptop. Licensing and other commercial relationships can pertain to matters of features on devices as well as applications developed for the various embodiments of the devices and in the corresponding account management system. Variations in the devices can be offered via different types of microprocessors, memory, display resolution characteristics and performance configuration/criteria.

[0105] The MediaBook can be of any size and shape, with the logical embodiments being square and rectangular. In some cases, a MediaBook can be oval shaped or a many sided FIGURE whose design can also be aesthetic, ergonomic or designed to resemble an icon such as a logo, image or familiar object. The Media Screens can also be square, rectangular, oval shaped, triangular shaped or cut/designed/shaped in the specifications of logos, characters or icons as demonstrated in FIGURE 16A. For example, Dell can have a relationship with the National Football League (NFL) and create a line of football themed MediaBooks where the color schemes of its franchises and their team logos and/or the NFL shield logo were featured on a variety of laptop, or

MediaBook, products. One hypothetical Dell-NFL MediaBook can feature a silver/black color scheme where there is a Media Screen that can display the Oakland Raiders famous eye-patch logo, and/or where the Media Screen can be manufactured in the shape of the team logo on either the exterior cover or inside open portion of the MediaBook. In the Raiders-Dell licensed relationship example, there can also be Media Screens that are silver and black stripes that circumnavigate the MediaBook, or portions of the MediaBook, or other similar branding efforts placed on the proposed device.

[0106] A device's Media Screen can be as small as a quarter of an inch on all four sides up to ½, ¾, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or more inches per side and all of the size ranges in between as the designed device can accommodate. For example, in FIGURE 17A, the Media Mouse depicted in image 1701, has three Media Screens. The first Media Screen, number 1, is a square of four equal sides of a quarter of an inch. The second Media Screen, number 2, features four equal sides of one half of an inch and the third Media Screen, number 3, features four equal sides of one and half inches. Media Screens can be affixed or embedded into the device or devices where the Media Screen can be flat, curved or rounded to fit the contours or design of the device, often surrounded by the plastic shell or supporting frame of the device. The Media Screen or screens can be of any length, width or height ranging from a quarter of inch to twelve inches and they can leverage LCD (liquid crystal display), LED (light-emitting diodes), OLED (organic light-emitting diodes) technology or other projection/display transmission technology fashioned from material taken from a group consisting essentially of but not limited to glass, plastic, plasma, organic molecules, organic compounds, polymers and/or other projection/display capable materials or components that can facilitate display in an active or a passive matrix or other form of visual display. The Media Screen can be square, rectangular, circular, triangular, spherical, cubic, pyramid shaped, diamond shaped, star shaped, mounded, tetrahedral, oval, elliptical, trapezoidal, shaped as a parallelogram, five sided, six sided, seven sided, eight sided, nine sided or ten sided figure. Image 1702 depicts a Media Mate with an eight-sided Media Screen, number 5, of a "Stop" sign surrounded by a plastic area, number 4, which is represented by shading. In image 1703, a hypothetical Media Monitor that displays the month and date has a rectangular Media Screen for the month, number 6, and a Media Screen of each day of the month, number 7. Image 1704 shows two other shapes of a Media Screen as depicted on a Media Keyboard, the famous Olympic Rings, number 8, and a triangular "Yield" sign, number 9.

[0107] In some MediaBook embodiments, the mouse touch pad used for scrolling can also be a media display space. The media content display capabilities can also be featured as background art of the keyboard. Additionally, if a user damages a Media Screen, or other part of the MediaBook, it can, in some instances, be replaced similar to replacing another working part of the computer. For example, if a Media Screen gets bumped, scratched or wears out, it can be removed for cleaning, maintenance, replacement or upgrade.

[0108] As shown in FIGURE 18A, some devices can plug directly into other devices, such as a Media Monitor, or MediaBook. In image 1801, Media ScreenMedia Screen, 1, plugs into, 2, the top half of an open MediaBook, 3. In image 1801, the connection can be, for example, via a USB, in which case the Media Screen can draw power and connectivity from plugging into the laptop or MediaBook. The Media Screen or screens are not limited to any particular placement on a MediaBook; they can be on any side and they can either plug in flush to the surface, extend from a base or be on the end of an extension support structure that can be straight, angled, or bendable depending upon the design of the particular Media Screen. In some embodiments, the Media Screens can be interchangeable and even disposable. The Media Screens can also communicate wirelessly via a technology such as Bluetooth. In image 1802, Media ScreenMedia Screen, 4, plugs into, 5, its supporting Media Mate base, 6. In some embodiments, this Media Mate can be powered by USB, batteries or by an independent power source such as a wall socket and it can communicate wirelessly with a CPU and/or other computing devices. In image 1803, Media ScreenMedia Screen, 7, plugs into, 8, a flat screen Media Monitor, 9. By plugging into a device, the new device can draw power from the other device and also provide a rigid structural support from the placement via a connection, whether it is a traditional USB multi-pin or some other male-female version of connection that accomplishes a similar objective. This plugging of one device into another is not limited to the devices depicted in these drawings, nor is it limited to the areas depicted on the devices shown in FIGURE 18A. In some embodiments where Media Screens are attached to devices, laptops and computing systems (including Netbooks, handhelds, video game players, PDAs and other similar products), they can be placed elsewhere in other designs and any can feature the extension technology where the Media Screens are placed at the end of structures allowing them to be placed in visibly advantageous positions to the user. For example, the screens can be attached to the end of an elongated

extension member. The screens can also be attached in a manner that permits them to rotate in any desired direction.

[0109] Some Media Screens can include the entirety of the available visible exposed surface area of the device or comprise only a fraction of the device's visible exposed surface area. Some devices can be divided into regions, quadrants, or target display areas, which are selected by the user for specific designs, downloads or other type of transmission, broadcast or media selection for personalized display or content distribution.

[0110] In a specific example of personalization, the devices represented in FIGURES 2A, 3E and 3F, for example, are divided into four parts where the left click button, right click button, base and main shell directly below the left/right click buttons are four distinct display areas, effectively compartmentalizing the device into four separate Media Screen regions or quadrants that can be accessed individually or in any combination. A user, for example, can create a multi-color design by transmitting one different color to each quadrant and give the entire device a "psychedelic" appearance. Another option can be to access an existing image or file that represents a psychedelic theme and assign or download it to the entire device or any combination of Media Screens the user selects. Another option to display a psychedelic design on the device is to design it in the "create" function of the account management software, an application where users can paint, draw, assemble, mix or otherwise design their own artwork to save in a file or folder and then appear, at the user's direction, on the target device.

[0111] The device's account management system can be password protected and can advantageously provide a device user with an improved ability to personalize, decorate or adorn a workspace or area related to a MediaBook laptop computer or computer peripheral such as the Media Mouse, Media Keyboard, Media Monitor and Media Mate. The same account management system can feature applications created organically by a user community in an open source environment, by licensed developers and also by companies wanting to distribute their content by writing their own accessible, downloadable applications and by combinations of efforts to put devices in the hands of users. For example, eBay could develop applications to allow their users to track auctions, bids, payments, products, deals, promotions, events and other company specific activities. eBay could even merchandise their own line of licensed devices that are specifically configured for their proprietary processes or community based activities. In other words,

eBay could preload devices with specific applications and they could also offer the applications via downloads on their site to promote use among device owners who did not get their devices through an eBay channel or offering. Similarly, other service based companies and content providers could leverage opportunities to merge their processes into the distribution channel offered by one of the enabled devices. The system can manage the display enabled entities together, or separately. In some cases, it can also integrate to functions on a computer system such as audio, or developed with respect to other popular application programs such as Microsoft Word, Photoshop, video games and other software publishers' offerings. The software can be delivered via an Internet source, via a CD that is bundled in with the device, or from an OEM relationship where the driver, or related licensed driver, is already installed onto the computer's operating center and/or CPU. Additionally, the devices can be updated by successive releases that are available via updates from an Internet source or conventional methods such as CD's. In some embodiments, any of the devices can also house and deliver the necessary software and related updates to their corresponding account management system in a transfer once connected and detected by the CPU. The management software can be set up with a desktop icon, including a shortcut, and/or placed in traditional operating system management categories, such as accessed in Microsoft's "start" icon that one finds in the lower left corner of computers that run their operating systems. Additionally, the Media Mouse can also have a system management command that is programmed into its "right click" command key.

[0112] In another embodiment, the media enabled device can provide information to the CPU upon initial connection that allows the CPU to automatically configure the media device for content display. For example, the CPU can receive operating instructions from the device (in the form of object code compatible with its operating environment, or a high level, platform independent instruction set such as java or C#, or any higher level language the system chooses to support). In this embodiment, upon the first connection between the host CPU and the media device, the host system requests instructions from the media device, which are then transferred by the media device to the host system. The host system then begins executing these instructions. In one embodiment, these instructions cause the host system to retrieve content for the media display and begin displaying it as appropriate. Alternatively, these instructions might cause the system to retrieve a more complete set of instructions from an Internet site (via

for example, a URL specified in the instructions). This can cause the host system to download a complete account management system for example, which would then be installed on the host device. The account management system would then control the media device as in previous embodiments.

[0113] In an alternative embodiment no instructions may be downloaded from the media device itself. Instead, the media device simply may provide a "boot url" to the system. This boot url specifies a location from which the system can obtain the very latest set of instructions. The host system then can download the instructions from the location specified by the url. This embodiment may have the advantage of eliminating any statically hardcoded instructions on the media device, freeing up memory space and reducing media device cost when compared to the previous embodiment. Additionally, this embodiment can ensure the very latest version of instructions are downloaded (since it may always be available via the boot url), whereas instructions statically stored on the media device may become out-of-date, increasing the possibility of users encountering previously known and corrected product defects in the instructions. This embodiment can have a disadvantage in that an Internet connection is required when the media device is first connected so that instructions can be obtained. However, given most media device content will also be sourced from the Internet, this is a relatively small disadvantage.

[0114] An alternative embodiment provides that the media device sends a "device identifier" to the host system upon connection. The device identifier can uniquely describe either a particular model of media device (for example, Cyberdine Systems, Inc. T1000), or a specific media device (via inclusion of a serial number, or similar). Through separate means, the host system has an account management system installed that can be specifically designed to manage the particular media device identified by the device identifier. Upon initial connection, a relationship between the media device and its matching account management system can be established. The account management system is then able to immediately begin displaying content on the media device. Note that in some embodiments the sequence of account management system installation and media device connection to the host system may not be important. A connection between the account management system and its matching media device can be made if the account management system is installed first, or if the media device is connected and then later the account management system is installed.

[0115] Once accessed or opened, the account management software system can offer the user the opportunity to view a device's properties, security data, options, make changes, order applications, schedule alerts, manage lists, implement features, respond to offers and queries, create and edit files, research and review the capabilities of the device and get help in using and/or understanding its operation. In some embodiments, operators can direct user reference or help tutorials to be displayed on a Media Screen in or on a specific device. The devices' account management system can be intuitive and feature a mix of visual, textual and hyperlinked guides to assist users in installing, configuring, programming and operating their devices. For example, if a system user wanted to access a device, he/she can log into the online account or open the software program loaded onto their computer and then choose from the relevant icons, such as Media Mouse, Media Keyboard, Media Monitor, MediaBook, Media Screen and/or Media Mate, that can appear. Another way the devices can be selected in the account management system is by leveraging a "checkbox" system where the device user/operator merely "checks" the box next to the device that he/she wants to configure and target for personalization efforts, e.g. media assignments or downloads or broadcast enabling and scheduling. Furthermore, video user instructions of a device can be displayed on a Media Screen of one of the said devices to assist in programming, operating and/or leveraging its capabilities. Additionally, similar instructional functionality can occur; where a user displays or broadcasts the "tech support" of a non-related program or application, Microsoft Excel for example, on a Media Screen of one of the devices while he/she works on a Microsoft Excel file on the main computing apparatus.

[0116] Another operating icon displayed and/or accessed in the account management system can be one showing the devices linked together as a system with a description "Integrated System" or something similar. The integrated system icon can appear, meaning the operator can pick a configuration that allowed design work to commence to one, two, three, four or any combination of connected, similarly enabled devices. This can result in users thematically integrating all of their peripherals via the content management system. For example, a Tiger Woods fan can have a media file of Mr. Woods swinging a golf club in a "flip-book" application around the enabled perimeter of a Media Monitor, display a static image of Tiger's famous celebratory fist pump as the background on the Media Keyboard, display Tiger's logo on the Media

Mouse's Media Screen and have a Media Mate stream highlights of his past shots and putts. In turn, Tiger Woods, or one of his licensees, could offer content to a variety of display enabled devices, even offering suggested integrations of content forms and special distribution opportunities. In another compelling personalization option, one can celebrate the fourth of July by framing the Media Monitor with a collage of well-known patriots, turn the Media Keyboard into an image of Old Glory through the background display feature and the Media Mouse can display an image of the Washington Monument while the Media Mate runs a slideshow of patriotic images the he/she created for the occasion. Other functionality can be to turn any combination of the devices black and orange for a Halloween mode, or Navy Blue and Gold for fans of the University of California, Berkeley or the University of Michigan. These color combination techniques can be accessed in the software operating management system of the device and either pre-loaded in a menu of options or designed by the user with the create and design tools.

[0117] In the account management system, a device user can leverage a "create" function where an image can be drawn, assembled, devised or digitally constructed. In "create" mode, a user can design or develop a file of work that can be inserted into an existing picture or image. For example, a person can take an image and apply a background color, or theme to it, in essence, layering an image, file or document with colors, other images, insertions and/or a combination of such additions. For example, if someone had a picture of their Saint Bernard dog and they wanted to put a background image of the famous Swiss Matterhorn mountain peak behind it, they can use a picture of the Matterhorn as the base photo for the new image and then 'place' the picture of their St. Bernard dog in front of it, or on top of it, effectively layering two images to create one. Additionally, they can find a picture of a barrel and edit it so that it can be 'placed' around the iconic dog's neck, which would then be layering three images to create one. In other words, there are many editing methods and options to artwork, images and media that can be displayed/played on a Media Screen or screens of a target device. The capability to select an image and insert additions to an image or delete substance from it can be performed, in some embodiments, in both the "create" and "edit" modes of the software account management system. Common terminology such as "background" and "foreground" can be used to assist the user in editing media applied to a device by the device operator. Once a desired image or clip of media has been satisfactorily delivered to

the device, the user can save it to a separate folder or file that can be accessed via the account management system or stored in common text, image or media folders.

[0118] Once in the account management system, the user can choose an assortment of commands or functions: browse, create, design, write, access Internet, download to, download from, edit, save, store, save as, insert, view, options, preview, print, send to, among others. After an action has been selected, the user can then preview, edit or send the media to the device or devices. Additionally, there can be a special "shortcut" function that can prompt the user with an immediate device destination for a piece of media. This allows the user to proceed to the corresponding "browse" box and select from any source on the user's computer, e.g. any drive, folder, file, document or other accessible source such as a web page, select the desired content and send it to the device. Furthermore, when an article of media has been identified or selected for transmission to a device, the software can send it to the visual preview icon that is a part of the account management system. There, on the main computer screen of the host computing apparatus, the user/operator can view the media as it would appear on the target device. The user can then accept, reject, edit or modify that piece of media. The user can also bypass the "preview" step and send the selected media directly to the desired target device to be saved on a Media Screen.

[0119] In some aspects, a feature can be described in terms of commands in the account management system. For example, the devices can display images in a "slideshow" or in a "Flip-Book" style, which is an ordered sequence of images that can appear to move and reflect an act, feat or timeline such as the construction of the Eiffel Tower. "Collage" can be a command function that a user can access on any of the devices that allow multiple images to be affixed to the device, sometimes in a predetermined layout. The images can either be inserted into areas fitting a prefabricated outline of a collage, or they can be layered on top of one another to create a random collage design. Also, a "movie" or "film" command option can allow a user to assemble, create or edit clips of moving pictures for display on appropriately enabled devices. Similarly, a "mash-up" command in the account management system can allow for the integration of separate forms of media into one image, file or piece of media and that can be downloaded to appropriately enabled devices. .

[0120] One feature of the software management system can allow device owners to choose from an inventory of preloaded content that can be thought of as similar

to "clip art" that one finds in popular word processing, artistic, photographic, design and desktop publishing applications and other related software. It can be accessed and navigated in a demonstration form, visual form, or through icons that correspond to popular topics or themes such as "nature," "architecture," "animals," "flowers," and other similar generic terminology. Other preloaded content can correspond to more specific subjects or categories such as "seven wonders of the world," "flags of the world," "Olympic heroes," and other topics of interest. Another key function can be a basic search mechanism that can find and sort media content, user tips, help with device operation, file management and integrating media for display, play or use.

[0121] The devices' account management system can allow device users to receive transmissions of media from outside sources, or individuals, to specific devices. In these instances, the account management system can allow the user to direct certain media from the device to the main computing apparatus and/or CPU and save it to a disc, drive, file, folder or other storage entity that exists in connection to, or in service of, the host computing system. Additionally, device users can broadcast a live feed such as a sporting event, news headlines, stock ticker or RSS to a device, devices or a specific Media Screen of a device. There can even be subscriptions that one registers for which can send media such as broadcasts and/or dynamic streaming content to a particular device or devices when they occur. For example, an individual can have updates of his or her stock portfolio sent by a brokerage service, or financial media entity, to a Media Screen on a device on a time basis, such as hourly or every two hours or at the opening and closing bells of the market. In other words, a user can see how each individual stock, or fund, or portfolio is performing at the times of day the user chooses. Furthermore, display enabled devices can be developed specifically with this application emphasized, meaning that a Media Mate, Media Mouse, MediaBook, Media Monitor or Media Keyboard can be developed by a financial services related firm for the purposes of reporting an a client's investments of interest. This subscription service can apply to any content, news or notification type entity, including the package delivery business, and it can be managed and accessed in the account management system of the device or devices.

[0122] The devices can have integrated functions or applications that enable the device or devices to have calendaring, alert, alarm and recognition functions. In other words, a user can program a device with timekeeping functionality so that the user can input scheduling data so that the device can remind users of appointments, meetings and

other milestones, time related and otherwise. For example, a user can create a buddy system, or a preferred user-list mechanism that identifies individuals who have sent an e-mail to a person who designates a target device for this alert purpose. When activated, the target device can serve up an image or other media (e.g., audio sound) that corresponds to the individual who has sent the e-mail. For example, If Mr. John Doe's daughter, Jane, e-mails her father, then a picture of Jane Doe can pop up on Mr. Doe's chosen target device or devices, including a specific Media Screen on a MediaBook, to alert him that his daughter has just e-mailed him. The arrival of Jane's e-mail can also be represented by a different icon, such as a logo, picture, image, text, computer file, song, sound or any combination thereof that Mr. Doe chooses to associate with correspondence from Jane. Additionally, Mr. Doe can restrict the e-mail display functionality to certain addresses and identities by filtering his preferences with respect to that buddy list functionality. Mr. Doe can also turn the application or function completely off and enable it entirely upon whim, consideration or desire.

[0123] Another variation of the embodiment can be to have the Media Screen on a device provide a window to his e-mail Inbox, where his most recent e-mails are listed. The emphasis of the application being that the user has the ability to personalize the reminders of those who e-mail the device or device's owner in addition to the manner in which he gets alerted by correspondence of friends and prioritized contacts. For example, one person on a buddy notification list can be identified by a personal photograph and another individual can be identified by a iconic logo of a sports team, a third person can be associated with a sound like a ringing bell and a fourth person can be associated with a famous landscape portrait such as the Grand Canyon, combinations of sounds and images, etc.

[0124] Additionally, the devices can be synchronized with popular social media networks such as Facebook, or popular communication tools like Twitter, where communications, updates and content can be directed to designated devices or Media Screens on devices. The service providing companies such as Twitter, Facebook, eBay, MySpace, LinkedIn, and any other can either push their services and/or products to devices via widgets and applications, or developers and individuals can pull the capabilities to them via widgets, applications, and methods of creating and accessing them. Further, unique devices and/or entire applications and functioning widgets can be created, written and distributed for specific products and services from companies like

eBay, Twitter, Facebook, the like and any other brand. Examples of how the described capabilities can be accomplished are described more fully elsewhere herein. In some aspects, widgets and applications that can apply to the device or devices can sit in a folder, or on a desktop or via a intuitive search and retrieve system or be synchronized in a user friendly manner in the User Interface or application field of the account management system. The synchronization also applies to programs such as Microsoft Outlook, Outlook Express and individual e-mail services such as Gmail, Yahoo Mail, AOL and Hotmail. Another type of functionality can be where 'texting,' or the popular transmission of text messages, can be directed to a Media Screen or screens on a particular device via the common methods used in cell phones, handhelds, PDAs and similar devices.

[0125] Additionally, an embodiment can integrate the alerting and buddy system classification into a thematic design such as a Media Mouse or Media Mate built in the shape of a police squad car where a meeting that was scheduled can be signaled by a flashing red light and siren sound with a picture, name or icon of the person appearing on a screen, or even in the back window of the police car themed device. Another application of this police car embodiment can be an e-mail coming into a user's Inbox and the red light blinking/flashing and/or a siren sounding to announce its arrival, or the windshield being a Media Screen that displays an announcement of the message's arrival. Furthermore, the calendaring and reminder application associated with the device or devices can have the same options where inclusion or exclusion is determined by the user via the master account management program where the properties are defined in understandable fields that allow the user to opt into, or out of, desired functions and features. For example, a user can go into the account management system and leverage a capability where the user permits or authorizes people to send media content directly to a device the user operates. This can be done through a buddy list or other directive where the individual can direct his Instant Messaging, or ability to receive text messages, to a Media Screen or screens to a target device with a Media Screen or screens. Other commands can include directing a specific program application, such as Microsoft's Media Player, to a particular device.

[0126] A further calendaring capability that the account management system can offer is to access, deliver and serve dynamic content that the user can program into a device or devices. For example, a Media Keyboard can be programmed to change its

display image every one, two, three, four, five, six, seven, eight, nine, ten, eleven, twelve, thirteen, fourteen, fifteen, sixteen, seventeen, eighteen, nineteen, twenty, twenty-one, twenty-two, twenty three, twenty-four hours or at any of the sixty minutes in between those hours. One option, for example, can be to program a "word of the day" function where a different word showed up on the device in twenty-four hour intervals. The source can be a file, web site, e-mail delivery, program loaded onto a drive or similar application. Once implemented, each day a new dictionary word can appear on the screen, complete with definition, etymology and other descriptive features. The user can further select the time and duration of the 'word of the day' being displayed. Another option can be to prompt daily occasions with icons. For example, sunrise can feature a crowing rooster, 12:00 PM can feature a picture of Gary Cooper in the film *High Noon*, and 5:00 PM can be cartoon icon Fred Flintstone sliding down the back of a dinosaur to signify quitting time and 10:00 PM can be a snoozing baby. The device's user can also program the device to select new images from specific folders, or user designated display lists, on a specific timetable, e.g. a new picture from a specific list or folder every four hours. In this 'every four hours' example, assuming that the folder selected, or list created, for display on a target device contained pictures of family members, then every four hours a new photo of a family member from that folder or list would appear on the device, or designated parts of the device that the user had selected. As indicated, users can also create lists or files of photos, images, video, media and integrated combinations thereof to appear in various sequences, or even in "shuffle" mode, an option that randomly selects one item for display at predetermined intervals.

[0127] In a more generalized embodiment, software applications can direct their output or a portion thereof, or receive their input or a portion thereof, from particular enabled displays. For example, a Media Screen might display all instant messaging traffic received by a particular user. Alternatively, notifications of new e-mails can be received on a Media Screen, while the user responds to the e-mail on their primary display.

[0128] In another embodiment, when an application is using a Media Screen for output purposes, the Media Screen also includes input means for the application. For example, a Media Screen might employ touch-screen technology, wherein after an e-mail notification is displayed on a Media Screen, the user can touch the Media Screen. In one embodiment, the touch causes an application-specific response on the computer's primary display. For example, perhaps the main window for the e-mail application becomes

activated and is brought to the foreground. The received e-mail is highlighted in the inbox, and its contents displayed in the preview pane of the e-mail application. This action allows the user to easily read and respond to the new e-mail based on a simple touch of the Media Screen.

[0129] In another embodiment, the touch of the Media Screen causes a notification to the computer's operating system. The operating system may provide for a standard response to such a notification (for example, activating the application's window on the primary display). This embodiment provides for a consistent response to Media Screen input across all applications. However, even in this embodiment, the operating system might also provide means for the application to customize the response to such a notification.

[0130] In other embodiments, Media Screens provide input devices that are not touch-screens. Media Screens might be manufactured with buttons located close to the screen or otherwise with a clear association to the Media Screen. Touching a button associated with the Media Screen sends a notification in a manner similar to how a touch-screen would send it above. A Media Screen's input device is not limited to buttons or touch-screen technology, but might incorporate dedicated touch pads, pointing devices, individual or groups of special purpose keys or buttons, sliders, knobs, keyboards, joysticks, etc. Note also that an input device's association with a particular Media Screen can be via its physical proximity to the screen, but might also be made apparent to a user via color, markings, labels, shapes or other means.

[0131] In another embodiment, the Media Screen's input means (button, touch-screen, etc.) cause a redirect of an alternative input device to the application associated with the Media Screen. To demonstrate, consider a Media Screen that displays instant messages received by a particular user. Simultaneously, the user is interacting with a different application (for example, e-mail) on the computer's primary display while utilizing the computer's primary keyboard. In response to a particular instant message displayed on the Media Screen, the user touches the Media Screen's input means (touch-screen, button, etc). The user's touch redirects the computer's primary input device, (in this case a keyboard), to the instant messaging application using the Media Screen. Subsequent keystrokes on the keyboard are now displayed on the Media Screen itself (and not on the primary display in the e-mail application).

[0132] When the host electronic device has several input devices, a redirect signal from a media device can cause the redirect of any of those input devices. For example, while the keyboard is used in the example above, a Media Screen redirect signal can also redirect input from a computer's mouse, touchpad, joystick, camera, or any other input means. Which input device is redirected can be based on a number of factors. For example, the application utilizing the Media Screen may dictate the input device. A keyboard may be redirected for character based applications, while a pen peripheral may be redirected if a graphics oriented application is utilizing the Media Screen. To support this embodiment, the operating system or other software application may provide an API that allows an application to set the input device needed when a particular Media Screen input means is triggered. This reduces potential conflicts between applications attempting to utilize the same input device.

[0133] In embodiments including input device redirection, some alternative input means (the Media Screen or other computer input, for example, a key or key sequence on the keyboard itself, mouse input, etc.) can restore the redirected input device back to its original use after the user has completed their interaction with the Media Screen application. The operating system or other software application may provide an API that allows the Media Screen application to release the redirected input device without requiring it to know which other application should now again receive input from that device (if any). Alternatively, the input device redirection can be transparent to the Media Screen application, with the Media Screen input means serving primarily as a signal to the computer's operating system to activate & deactivate the Media Screen application. Thus, deactivation of the Media Screen application is accomplished through preexisting operating system paradigms.

[0134] Configuration of the previous embodiments can take a number of forms. Of course all forms must define which applications are utilizing which media displays and input devices at all times. In one configuration embodiment, applications request output devices by name. For example, a stock trading company utilizing a Media Screen to display a stock ticker might publish a software application. The application outputs the ticker to a media display with a device identifier of "Stock Trading Company ABC's ticker display." If such a display is connected to the system, the information is written to the device and content is displayed, otherwise, no information is written.

[0135] In another configuration embodiment, a display configuration subsystem, perhaps but not necessarily included in the computer's operating system, provides a central location (in the "control panel" for example) where application and display devices are "matched." For example, a user might configure their e-mail application to send new e-mail notifications to the display attached to the top of their primary display, while instant messages go to the display attached to the right side of their primary display. In this embodiment, applications are aware only of writing information to a display other than the primary display, but do not write to a specific media device.

[0136] To enable this embodiment, several API's between the display aware applications, the media displays themselves, and the configuration subsystem are possible. For example, an application might "register" its ability to output content to a secondary display with the configuration subsystem. Media displays might also register with the configuration subsystem when installed (via their device driver or account management software), or the operating system itself can register the media displays based on the device identifier or a "capabilities list" provided to the configuration subsystem by the media display upon the initial connection.

[0137] When the user later consults the configuration subsystem's user interface, a list of applications and a list of media displays appear. The user can then assign a display to each application.

[0138] Default configurations can also be provided to reduce the configuration burden on the user. "Smart defaults" are enabled by the registration of "capability needs" by applications, while the displays register (directly or indirectly) a "capabilities list." The configuration subsystem can then better match application needs to media display capabilities to enable the smart defaults function.

[0139] Note the potential for inefficiencies or conflicts in this embodiment generally. i.e. when the application is not running, a media display assigned to it risks going unutilized. However, allowing several applications to use the same media display risks conflicts between applications for a display resource. Resolving these issues is a matter of policy, with the appropriate trade offs understood in the art.

[0140] The Media Screen or screens display technology and account management system software can also apply to printing, scanning and fax devices. For example, a Media Screen or screens can be visibly disposed on the external encasement of a device that specializes in one of those tasks, or all of them, for personalization and

identification purposes and also as a preview to a print, scan or fax job being executed. Further applications include applying at least one extra display, or Media Screen, to a television set, or at least one Media Screen to other home electronic device.

[0141] The device, or devices, can be interactive and receive technical upgrades, promotional offers, special artistic designs, licensed images and user management tips from an Internet source or other source such as a special CD. These can be offered gratis, for purchase or bundled into a commercial association with a third party. For example, a device can have a third party promotional agreement where a designated licensor or entity can appear on the device and say, "Hello, _____ (name of device owner). You have just won a $100 shopping spree at _____ (name of sponsor business)." This can also be a celebrity spokesperson saying or texting "Happy Birthday,_____(name of device owner)" or "Congratulations_____(name of device owner). You have just won front row seats to my concert this Saturday night." Further, there can be special content relationships where the device is manufactured and designed to accentuate specific media content from a specific property, such as a sports team, athlete, singer, band, actor, licensed image, entertainment character, film, character, public personality, comic book character or identifiable icon. For example, a Media Mouse and/or Media Mate or other enabled Media Screen associated with the technology can have a Star Wars theme where Darth Vader tells the device owner, "_____(name of device owner), you have e-mail." Or Darth Vader communicates to the device owner in his famous tone, "_____(name of device owner), you have a meeting." The user can also opt-in or opt-out of operating applications or special promotional offerings that can involve content unique to the device or devices and its customer base. These promotional and/or personalization activities can be opted-in or opted-out depending on the preferences of the device owner and restricted to promotional activities of the device owner's choosing.

[0142] Thematic devices open up novel commercial markets where the said devices exceed the normal use standards of the common computer system and computer peripheral by acting as a new point of content distribution or communication to a computer user. For example, a Media Mate device, such as image 804 in FIGURE 8A, can take the shape of a heart and be a Valentine or Anniversary or romantic commemorative. An individual can give or receive a Valentine/Anniversary/Romance Media Mate where the device can have preloaded onto it various sentimental media items

such as pictures of one's significant other, even video from a wedding or other significant relationship milestone(s). The Valentine Media Mate, or other device such as a similarly themed Media Mouse, can also have an application where the device can be sent special images, messages and content from the person who gave the device to the recipient. The correspondences can be calendar driven reminders of relationship milestones such as anniversaries and birthdays, or personalized content such as romantic text messages sent on a whim. In another application, the device holder can access content that was sent to him or her via a special code that the recipient must enter into a host website, or other secure transmission medium, in order to obtain.

[0143] In other useful and novel design embodiments, there can also be information response capabilities built into the devices. For example, there can be a device that assists in testing or quizzes where a question can appear via a website or program application on the monitor screen of the main computing apparatus and the answer can be sent to a Media Mouse, or other enabled device, where the user can put his or her hand over it, or simply darken the image by programming command or even touch, only to lighten it by another programming command or touch when prepared to view the answer. Another device can be a "Happy Birthday" Media Mate where the device can be shaped like a traditional birthday cake where the "Happy Birthday" song gets activated by the giver to the recipient and the corresponding media content, including birthdays and milestones of other relevant individuals is preloaded onto the device or accessed via a special code entered at a related website or that can be configured in the account management software. In another version, an embodiment can be adapted for polling purposes where the Media Mate monitors a user's computer behavior and then communicates it back to a data collection center or facilitates a "Question & Answer" session. A branded device can even be created with a TV show such as *American Idol* where viewers can leverage interactive elements to vote on performers, ask questions and make song requests. In short, the devices can feature interactivity beyond the downloading and displaying of media and other content that can be an extension of the device's personalization capabilities, especially with respect to third party relationships, promotional and otherwise.

[0144] The device or devices can display open browsers to receive live content, view static and dynamic information from the Internet. One useful application can be a special "meeting" or "presentation" option where a presentation can be

conducted by an individual where parts of the presentation can be directed to the main monitor screen and/or to a Media Screen on a device that has been identified for transmission and display to a web address that can broadcast the presentation. For example, an individual using a MediaBook can take part in an advertising presentation by viewing the meeting on the device's Media Screen, or on a Media Mate with a large Media Screen, while taking notes and making changes to a document that is open on the main monitor screen. Or, the same individual can watch the meeting in an open browser on the main monitor screen of the MediaBook and view reference information, such as a hypothetical ad campaign for the brand being discussed on a companion Media Mate while the individual receives Instant Messages from another participant in the same meeting on a Media Screen located on or in or attached to the MediaBook. If the user wants to respond to the Instant Message, he/she can have another browser open on the main monitor that is in the account management system of the device which authorizes/manages that action. In "meeting' mode, individuals can sign up for a particular meeting, lecture, presentation or destination programming in advance, or enter it in real time, and assign the streaming content of the meeting to a particular device, or view it via a browser on the main monitor of the computer apparatus, while participating via the installed camera if they have a camera equipped device.

[0145] The software or account management system can also have a "store" or e-commerce aspect unique to the products and services that correspond to the various devices. This can be a medium where users buy, trade or even sell media merchandise that can be displayed on any/all of the peripherals. The items can be device specific, or categorized for corresponding models of specific devices. In this mode, "search" and "help" functionality can guide or assist users through the process of sorting, organizing and reviewing basic offers, ideas and content for their devices, much like ringtones are available for cell phones, and MP3 players are merchandised for digital music offerings. This e-commerce functionality can also be a place where third party relationships and licensed merchandise is featured, promoted and sold. Furthermore, a device user can prioritize certain protocols, relationships or content providers to a particular device. For example, a NY Yankees themed MediaBook, Media Mouse, Media Keyboard, Media Monitor or Media Mate can have a default to its Media Screen or to a particular screen or region on a target device, where a licensor such as the NY Yankees can send updates. The updates can take the form of an in-game development such as a score, or an organizational

press release such as a trade or injury report. The Yankees can leverage broadcasts to the device or devices to even make a commercial or promotional announcements such as game tickets for sale, or a special charity auction of autographed merchandise. As in the other examples of licensed devices, The NY Yankees themed device can be shaped like a baseball and painted or configured to project a pinstripe design either around or on a Media Screen or screens. Another application for a device owner can be with a company to whom relevant transactions are important, such as eBay. In this example, an individual can target eBay transaction developments, or the status of various auctions, to a device or devices. The company, eBay, can even distribute and/or merchandise its own devices, or system specific software, that report real-time developments to a device. This applies to financial service firms, information services companies as well as any entity to whom the up-to-date information flow is important. Device users can also configure the reporting of real-time developments to 'turn them on' or 'turn them off' and/or other options that relate to such communications.

[0146] In another embodiment, the Media Screen can be a data destination for a specific content provider or Internet service such as Twitter or Facebook. In this type of application, the display screen can be an interface for accessing, and displaying data and/or digital content of the provider such as updates. In other words, special licensing arrangements could be made so that the Media Screen or display area could feature a specific provider's content. In this example, a content provider's server could be a source of media, data or content that is ultimately transmitted to a user's designated Media Screen on a device such as a Media Mouse, Media Keyboard, Media Mate, Media Monitor, Media Book and/or any other enabled device. Furthermore, specially branded devices could be created wherein the manufacturing design factors in the most favorable shape of Media Screen to feature the content. For example, there could be a special device called a "Twitter Mate, Twitter Mouse, Twitter Board," or "Tweetie Mouse, Tweetie Board or Tweetie Mate" where the device was enabled with a Media Screen or design that features the type of communications that Twitter specializes in delivering, e.g. in 140 character intervals or transmissions. For companies that provide relevant products and services, the Media Screen or display area of the enabled device could be configured to receive and display transmissions from the origin server tailored to their said products and services.

[0147] As described, the devices can come pre-loaded with substantive information or content. This pre-loaded feature can be the decision of the manufacturer,

technology licensee or the result of a promotional, contractual, or independent relationship negotiated between relevant parties. The information can include operational assistance or licensed, pre-loaded content from an entertainment entity or content provider such as a music label, musical act, broadcaster, intellectual property rights holder, sports team, college or University, personality, historical figure or event, structure, or movie characters from a production company such as Disney, a film franchise such as Star Wars or feature film releases with respect to specific devices. There can also be similar relationships with publishers, educators, archivists and producers or licensors of media and information. Furthermore, the devices can have sufficient memory and microprocessor architecture for storage and display of individual files, relevant content and for the necessary operational use of the device.

[0148] Some devices can have a detachable construction where the interior of the devices can be separated from their exterior shell for the purposes of maintenance, cleaning and/or part replacement. The devices can have a single projection Media Screen, two, three, four, five, six, or seven Media Screens or be comprised entirely of a unified display element that can display media on the external surface of the device. This exterior shell, for example, can be the traditional humpback shaped mouse, rectangle of the keyboard or square of the monitor frame. It can also be a part of the thematic designs such as a football, baby crib, dog paw, heart, automobile, or other shapes in a device such as a Media Mouse or Media Mate. It can, as discussed, relate to the Media Screens in MediaBooks as well. In some detachable embodiments, the top half of the device integrates the protective exterior to the supporting bottom half framework that holds the necessary components and circuitry to execute the tasks associated with the device. In other words, a part or parts of the device can be easy to remove and maintain before replacing it in the pre-molded alignment with the circuitry to operate the device. The removable portion can consist of hard, molded plastic that fits into the fixed portion of the device and can feature sufficient temperature and microbe resistance properties so it can be properly cleaned and dried before being reattached to perform its function. The unit can be connected by simple easy to unlock parts such as clasps, locks, screws, clips, bolts, or interlocking joints that are safe and easy to operate, allowing the user to snap, pop or click open the device quickly and without inducing excessive wear over time. It can be affixed back to the circuitry and frame of the device through a variety of methods

essentially consisting of but not limited to: grooved alignment, designated points of contact, or interlocking fitted parts.

[0149] In some of the devices, various control buttons that relate to functionality of both the device and even the CPU can be located on the device. These control buttons can be located on the side, front, bottom or top of the devices. In some laptop or netbook or "mini" computer embodiments, e.g. the MediaBook, certain enabled display areas or Media Screens can have separate volume or brightness related controls, controls that are accessed via the device's account management system, special buttons added to the unit and/or sound capabilities routed through to the computer's main volume control system. In some other embodiments, the devices can have a cover, partition, section or lid that protects, conceals and shields a control panel. In these embodiments, the section can flip open on a hinge or via a clasp and reveal a keyboard or other such controls that can pertain to functionality. Furthermore, the device designs can allow for space to attach buttons for functions, logos, markers, lettering, three-dimensional icons or a combination of efforts to otherwise equip and/or label the various devices. In and of the embodiments, the devices can include all or some of the required keys, command and functionality buttons/mechanisms found in most commercial keyboards such as QWERTY and other languages, including the feature buttons that pertain to computer operation, monitor adjustments, media activation and other common commands. Another capability can be the ability to perform as an alternate or "backup" keyboard to the CPU.

[0150] The devices can take on special form factors, even the Media Monitor. There could, for example, be a baseball themed Media Monitor, where the actual monitor was shaped like a baseball and the frame can contain Media Screens where there are Media Screens embedded in the architecture of the larger monitor device. Other embodiments are also possible. Virtually any sports activity (for example, baseball, basketball, football, tennis, hockey, volleyball) includes particular equipment that can be used as a form factor for a Media Screen. The form factor then signifies the type of information that will be displayed. For example, when a user plugs in a hockey themed Media Screen to a host computer, the Media Screen begins to display the very latest hockey news, scores, etc.

[0151] The possible form factors go beyond the sports domain. For example, a media display intended exclusively for financial data from a stock trading company can have the company logo printed on the case. The display can be dimensioned to resemble

the scrolling stock ticker in New York's famed Times Square, i.e. just one character high by several characters long. The display might have other specialized capabilities tailored to display of the specialized content. For example, special purpose lights can indicate an up or down stock market, or special symbols can light up upon certain events (similar to a modern car dashboard's indicator lights). The closing bell might sound at the appropriate time, along with a flashing bell indicator light on the display. Thus, Media Screens can be customized to communicate the content type the company wishes to convey via shape, color, size, special display capabilities, logos, etc. Media Screen form factors can also be utilized effectively to communicate the brand image of the manufacturer.

[0152] Provision for the user to customize the information provided by the Media Screen can also be made. If the device is connected to a computer, the manufacturer can provide an application that allows the user to customize the display information on the device. Connectivity between the computer and Media Screen is established via traditional means. Alternatively, the device can expose a web based interface, allowing the user to configure the device directly (via a standard web browser). This technique is known in the art and frequently employed with network infrastructure devices. This technique does have a disadvantage of requiring more software (and thus potentially more hardware) resources on the device itself, potentially increasing costs.

[0153] Additionally, these media devices can be designed to operate independent of another computer, with only a direct connection to the Internet for support. This Internet connection can be via wired or wireless means. Configuration of the computer independent Media Screen can be done directly as described above, with the Media Screen exposing a web based interface. The Media Screen would then consult a web based server to receive content to be displayed.

[0154] Alternatively, all configuration and content updates can be centrally managed by a web based application maintained by the manufacturer. By using a device identifier, serial number, or other identifying information, a user can login to a web based application supported by the manufacturer of the "computer independent" Media Screen. Once logged in, options are presented allowing the user to customize the types of information displayed (scores but not news, news but not scores, etc). The web application can also allow the user to configure the frequency of updates. Many other features are possible via software and known in the art.

[0155] In this embodiment, the web application server would understand how to remotely connect to the "computer independent" Media Screen based on the device id (or other information) provided by the user. Several mechanisms are available to establish a connection between the Media Screen and web server. The most effective is for the Media Screen to periodically "poll" the web server, including its identifying information in the "poll" request. This mechanism works best because the web server's IP address or hostname can be established and well known at the date of Media Screen manufacture. It can thus be "hard coded'" in the device. A polling mechanism has a further advantage of avoiding problems with firewalls and proxy servers, which often sit between the web server and Media Screen, preventing a connection initiated by the Internet server. Since most firewalls and proxy servers are configured to allow http request messages, especially those initiated from the "client" side (which is the position of the computer independent Media Screen.), a Media Screen initiated connection works best.

[0156] When the Media Screen "polls" the server, the server checks to determine if it has any new configuration information. If the user has updated the configuration since the last poll request was received, the web server simply delivers the new configuration to the device via the poll response. These configuration update polls can also be piggybacked with the Media Screen's request for new content, thus improving network efficiency.

[0157] The account management system capabilities can be implemented within the media device itself. In some embodiments the account management system for a computer independent media device for the account management system can be web-based. This web based software can be maintained by the manufacturer of the media device, or licensed/authorized third party and can perform all the activities of the personal computer based version. However, the architecture for implementing the plug-ins can vary when compared to the previously discussed embodiments. The web-based application can provide a web service interface to enable content providers (or third parties) to extend the capabilities of the web based application in a manner similar to that of the PC oriented application. For example, a Facebook plug-in can be developed that gathers content via Facebook's web API and then sends the content via the plugin interface to the web based account management system. The web based account management system would then forward the content to the media device during the next

poll request from the media device. Plug-ins for the web based account management system can also be provided for other web based applications such as eBay, Twitter, etc. The plug-in architecture can support additional applications in the future as they are developed.

[0158] In another embodiment, the web-based account management system can host the plug-in software, alleviating the need for plug-in developers to maintain a dedicated web presence. These plug-ins can be implemented as widgets or as other forms of Internet programming models. The plug-in developer can simply upload the executable before the plug-in is "registered." To ensure quality, the device manufacturer may implement a plug-in certification process to ensure the plug-ins meet quality standards and will perform reliably for media device customers.

[0159] Aftermarket embodiments, some of which can be referred to as Media Mates, can be manufactured and bundled with or sold separately for use with a computer system or one of the proposed devices. These can essentially be add-ons that can be purchased for application to the outsides of peripherals, or adjacent to a computer system, that display media on a Media Screen or screens. Some aftermarket devices can be applied or affixed to a computer or workstation by the item known as Velcro or via bolt, clip, screw, specially designed joint, hinge or interlocking sleeve mechanism. In some cases, these embodiments can allow devices to be applied to the existing peripherals or computing system that does not have a Media Screen or screens as originally configured. The devices can communicate wirelessly by a technology such as Bluetooth®, be powered by batteries, via a wire or connective cable such as USB or by plugging directly into inserts that are connected to, or are a part of a frame, e.g. a multi-pin or similar connection that could be USB.

[0160] Another peripheral device that leverages a display capability can be called the Media Projector. It can be a cartridge insert or flip-out device from a MediaBook, or it could, in some embodiments, be an attachment that plugs into a multi-pin connection and projects media against external. For example, the device can project a file such as a Power Point against an appropriate surface such as a white board, wall, projection screen or relevant surface. In other embodiments, this projector device can also be an external device that attaches via a sleeve, clip-on or slides into a slot that connects to the host unit. As a standing peripheral, the angle of projection can be manipulated via an adjustable angling dial that aims the projection beam accordingly. For devices where

the device is part of a MediaBook or laptop computer, the clamshell design can assist the user/operator in angling the Media Projector in many directions. Further, with its integrated software capabilities, the device can access a computer's files easily and seamlessly for the purpose of sharing the information within a room and/or broadcasting to other individuals who are in remote locations but participating in the presentation. The devices can communicate wirelessly via a technology such as Bluetooth® and can be powered by a connection to the host computer, a wire or cable such as USB, batteries, wall socket or any combination thereof.

[0161] Various embodiments of the MediaBook, Media Mouse, Media Keyboard, Media Monitor and Media Mate can be designed, constructed and equipped for the purposes of enhanced video game playing or to be connected to a video game player. For example, a Media Screen or screen on a device can be targeted for specific video game content such as highlights, files of highlights, broadcasts of game promotions, other broadcasts from video game content providers or action of others playing a video game. Also, specific embodiments of joysticks for game playing can be developed with Media Screen display technology; meaning that a video game joystick can have at least one display and the means to display media upon it, or to it. The Media Screens on the special joysticks can show highlights of the actual video game action being played in real time, broadcast game-playing strategy and instructions to the players, broadcast other games played by people, show scorekeeping, stream aspects of the game to the device, or integrate related media with individual titles, or categories of titles in mind. The peripherals, for example, can transform to the theme and qualities associated with a specific game such as *John Madden Football* or *Grand Theft Auto*, or to a category of online gaming, including sports, poker, military, history, trivia, fantasy, science fiction and driving. For example, a gamer playing *John Madden Football* can have quips and commentary from John Madden, or individual players, originating from and playing through a Media Screen on a joystick or other Media Mate. These game enabled devices can also have their own audio features, where speakers are located on the devices, or integrated into the game console system so that the commentary by John Madden, a player, or other announcer has priority over other audio related to the game action, or is spliced in along with the other relevant sounds of the game. In other words, game peripherals can be specially designed, constructed and programmed with Media Screens for personal computers and specific video game consoles such as PlayStation®, Xbox or

Wii, and the games, titles and publisher requirements that correspond to their respective platforms and related titles. In short, the peripherals can be enabled with Media Screens to add functionality and enhance the game playing experience. In the *John Madden Football* commentary example, this means that there can be a feature whereby the video game player enables a device with the "announcing" or "commentary" feature and a personality or representation of one can appear on a Media Screen and their commentary, observations, input and contributions correspond to the game through the Media Screen enabled device, including audio. Of course, the game player can opt not to enable the "commentary" feature and instead stream replays or highlights of the *John Madden Football* game action, dedicate the Media Screen to statistics or other options available in the account management system of the device.

[0162] Another aspect of the technology as it relates to video game playing can be to develop a Media Mate peripheral specifically designed for recording, announcing and editing purposes associated with actual game action. The device can be called something like "Press Box" and it can connect to the game playing Personal Computer or game console via a wire or cable such as USB and communicate wirelessly via Bluetooth® or similar technology. Once in the "Press Box" application, a user can turn a video game event into an actual broadcast or video highlight show where an individual or individuals can assume the role of announcers and describe and comment upon the action, make replays, create files for later use, compile statistics, have commercial interruption and make the experience a personalized functional broadcast. In this embodiment, Media Screens can be used for things such as different camera angles of the game action and to review editing tasks and assemble a final broadcast or file. The device can have control buttons located on it for recording, playing and other related functionality commands or it can be done in a software management program on a Personal Computer that can connect directly into, or communicate wirelessly, with the device. The software management program can also store different templates for different games and titles and enable the commentary or broadcast experience where the action is occurring via a video game console or Personal Computing device and store the files in a manner conducive to broadcasting, sharing or archiving. For example, if John and Jane Doe want to play *John Madden Football* against one another, their siblings Jack and Jill Doe can act as announcers and integrate their commentary and personalized production aspects into the experience, record the event, broadcast the event, save it to a file for

rebroadcast and editing if desired. This means that the Doe family can archive their games, make special compilation files and keep a personalized record for posterity. Another example would be where a "Press Box" peripheral was developed for Guitar Hero® and it allowed members of the Doe family to assume the role of producers to create actual videos of game players to songs, and/or other aspects of the game and Guitar Hero experience. They could also role play as announcers to judge performances by friends and other family members and make the game into a production event where all or part of the game aspects can be edited, recorded, shared and uploaded to a common storage device or shared for public display via a video service such as youtube.com.

[0163] The Media Screen technology and its means for displaying media also applies to Personal Digital Assistants (PDAs), devices such as the "Blackberry," and other handheld and pocket-sized computing and communication devices. In other words, a PDA device can be enabled with a Media Screen or screens for the purpose of media display, placement of an identifying marker, or other effort of display identification or personalization.

[0164] Another embodiment enables themes to be downloaded from the Internet instead of created directly by the user. For example, a computer manufacturer can supply several "prepackaged" themes for a particular computer configuration. Upon purchase, an initial "default" theme is installed. Utilizing the account management software, a user can select an alternative theme from a list provided by the manufacturer or a third party. After purchase, the manufacturer or third party can create new or updated themes, for example to reflect new ideas or events (a theme based on a new movie release perhaps). Since themes are made available via the Internet, they can be manually selected by the user or perhaps automatically downloaded and displayed on the device without direct user involvement. When automatically downloaded, a user setting may control the level of automatic theme selection provided, for example, choosing the frequency of updates, or a particular theme category (sports, science fiction, cartoons, etc) from which to choose when deploying a new theme.

[0165] In media device embodiments that include only a single display and no other functions, the existing multiple display support of modern computer operating systems may be utilized. The host computer would thus include both its primary display as well as the display of the media device. Modern operating systems such as Microsoft Windows 2000, XP, Vista, and Windows 7 also typically provide support for multi-

function peripherals. Utilizing these capabilities, devices such as a printer with an integrated scanner, fax machine, and modem, or a sound oriented device including both speakers and a mass storage system for sound files are now easily supported. The disclosed media devices including multiple capabilities, such as the media keyboard which includes a keyboard and one or more displays, can interface to the operating system via these preexisting operating system capabilities.

[0166] **FIGURE 19** depicts a typical software architecture enabling a computer configuration including a media display device. Note in this embodiment the media display is treated by the operating system as a typical computer display, albeit with different display dimensions compared to a traditional computer display. Also of note is the use of one device driver 1901 per physical device to provide communication with the physical device. One or more functional drivers 1902 are present for each device, depending on the number of functions each device incorporates. For example, with a media keyboard incorporating seven displays, the architecture would consist of eight function drivers (one for the keyboard, and one for each of the displays), but only one device driver, which manages communication with the physical media keyboard device itself. Such configurations are easily supported in the existing art. See for example, Windows Driver Model (WDM) or Windows Driver Foundation(WDF). See also the USB® specification at http://www.usb.org.

[0167] Multi display environments of typical operating systems such as Microsoft Windows also provide multiple operating modes. In one embodiment, the operating system can be configured in a "spanning" mode, where the media station display is treated as simply an extension of the display space available. In this embodiment, the display component of the media device appears as a traditional secondary display to the operating system. The traditional "desktop" of the host computer "spans" from the primary display to the media display(s). In spanning mode, traditional applications are unaware of the media display's presence yet still provide display capabilities to those devices simply via their position on the desktop. With the spanning mode embodiment, any application can provide media display capabilities. This embodiment provides an advantage of low cost support for an infinite array of content types, including traditional image files, streaming video, selected content from web sites, proprietary content of unknown format, etc, as long as an application is available to

display that content. The disadvantage of this embodiment is the limited ability to customize the display based on the native features of the particular application utilized.

[0168] An alternative embodiment provides for applications that are media display aware and direct their output to a particular media station display or displays. This embodiment enables a very specific and customized display appearance not dependent on the generic applications used in the previous embodiment. In this new embodiment, the media display aware application (MDAA) identifies its specific output device/display via the operating system's graphics support API. For example, in Microsoft Windows, the GDI API supports this capability.

[0169] FIGURE 20 describes one possible embodiment of an account management system, which is media display aware. (MDAA) The architecture depicted in FIGURE 20 supports a variety of display content types and sources, including content generated by both local and web based applications. This MDAA provides native support for local content types such as known graphics and video file formats, as well as console application output. A console application can provide simple display output such as a quote of the day, or time of day information. The MDAA also provides native support for standard Internet content retrieval protocols such as RSS, HTTP, and POP3 (e-mail). To support content not accessible via a native, standard protocol, the MDAA provides a "plugin" API, enabling programmers to feed web application content accessible only via "non standard" means directly into the MDAA. This plugin architecture can be utilized to retrieve display content from both "web based" applications or local applications running on the host PC. This architecture also provides for future extensibility of the MDAA as Internet standards and content types continue to evolve.

[0170] In one embodiment, popular content providers such as Facebook, Twitter, eBay, CNN, or ESPN develop their own "plug-in" for the account management system. The plug-ins can also be developed by the media device manufacturers themselves or any third party with access to the content provider API. The plug-in enables display of content from the providers on the media device. The web-application can utilize widget technology or other Internet programming models to accomplish this function. As the Internet continues to evolve and new web applications gain popularity, new "plug-ins" can be developed to extend the media device display capabilities.

[0171] In one embodiment, the MDAA provides an interactive user interface (2010) to manage the configuration for the connected media displays. For example, if

several media displays are connected, the user can select, via the MDAA user interface, which display source (files (2003)(2004)(2005), plug-ins(2011), rss feeds(2007), etc) should be displayed on each of the connected displays. Alternatively, display configuration is read by the MDAA from a configuration file(2013), thus enabling a fully automated configuration, useful in prepackaged products, which are typically customized without user involvement.

[0172] In another embodiment, display configuration is periodically updated via an Internet connection. The MDAA (either directly or via a helper application) contacts an Internet server (2014) maintained by the computer vendor or a 3rd party to retrieve updates. These updates may specify both the display content and its configuration (how the content is laid out across the hosts configured media displays). To facilitate the server's ability to generate an appropriate display configuration, the MDAA sends the local display configuration to the Internet server when requesting updates. The Internet server is then able to retrieve the appropriate update (including content and configuration) for the MDAA's specific display configuration. Display content can be specified via either inclusion of the content itself (in the form of image or video files), or via a URL the MDAA can utilize to retrieve the display content. Using this embodiment, the original computer vendor or their assigns can control the customized appearance of the display(s) long after the sales transaction is completed.

[0173] FIGURE 21 describes several additional embodiments of a Media Screen. In the FIGURE, Media Screens may be attached to a laptop computer screen via a positioning member 2101, 2105, and 2108. The positioning member may also be referred to as a support member. When attached as shown in FIGURE 21, the Media Screen can be fully functional. The positioning member may provide not only structural support for the media display, but also electrical and digital connectivity if so required. Note that Media Screens may be supplied with electrical power via batteries or a separate power cord. In such embodiments, electrical power is not provided by the positioning member. Digital connectivity for the Media Screen in this embodiment can also be provided via the positioning member, a separate wired connection, or via a wireless connection. Connectivity between the primary display and the positioning member may be provided via existing standards such as USB, but is not limited to only USB. In some cases, the weight of the display may require the electrical/digital connection utilized (such as USB) to be augmented with other mechanical means to ensure proper structural support. For

example, additional clips or screws integrated into the positioning member or an associated connector to attach the Media Screen to the primary display. Such attachments may be referred to herein, for example, as an anchoring member or members.

In another embodiment, Media Screens can be attached to other displays not specifically associated with a laptop computer. For example, Media Screens could be configured similarly to the method of FIGURE 21 but instead attached to the display of a "desktop" personal computer, or the administrative station of a copier or other large electronic machine or base of a device such as a Media Mate. A Media Screen or screens can also attach to instrumentation devices, for example oscilloscopes, protocol analyzers, etc. Media Screens might also attach to digital television sets or set-top boxes (for example those provided by cable providers to deliver additional flexibility in the television viewing experience or for television content providers to offer additional content to viewers without utilizing valuable primary screen area.

Note that a media display may be attached to a primary screen by more than one positioning member. For example, the weight of the Media Screen may require more support than is possible with only one connector. This is the case in embodiment 2104, with multiple positioning members present (2105). While only two positioning members are shown in this embodiment, more are possible, including embodiments including three, four, five, six, seven, etc positioning members. Devices can have at least one post to connect it to the primary display and also have at least one perpendicular post or positioning/support member attached to a base or anchor element that connects to the computing device. The Media Screen can also be attached on the sides 2117 and 2118 of the computing device. Image 2107 shows a Media Screen 2110 with yet another different type of support/connection apparatus 2108. This demonstrates that there are many interchangeable elements to the ways Media Screens can be connected to portable computing devices. The Media Screen 2110 can also be attached in other locations on the device such as 2119 and 2120.

[0174] In some embodiments, the positioning member may include an integrated hinge or flexible joint (2102, 2109), allowing the Media Screen to be positioned at various angles relative to the primary display for the user's convenience. Alternatively, positioning members can make use of "gooseneck" technology, telescoping technology, or other technology to provide flexibility so that the Media Screen can be

positioned at various distances and angles from the primary display. The display, support member, and connector may rotate or be adjustable relative to each other.

[0175] The extension support apparatus as a connection to the computer can be of any reasonable length from flush to the connection with the frame of the computing device to 10 inches in length. It can be rigid, bendable, angled, telescopic and/or have at least one hinge or joint element in some embodiments. The Media Screen 2103 can also attach via a USB type connection on top of the open clamshell 2115, or on the other side 2116.

[0176] Image 2111 shows yet another embodiment of a Media Screen 2112 that resembles an American Flag. It could be any design, naturally, and it is supported by a connection to the primary display by an apparatus that features a base 2114 and a single perpendicular pole-type piece 2113. The location on the primary display can also vary. For example, the connection can be located in 2121 and/or 2122. In all embodiments, there can be multiple points of connection that deliver power such as a USB and also structural support. This type of Media Screen connectivity can also apply to handhelds and PDAs in some embodiments.

[0177] The herein described subject matter sometimes illustrates different components contained within, or connected with, different other components. It is to be understood that such depicted architectures are merely exemplary, and that in fact many other architectures can be implemented which achieve the same functionality. In a conceptual sense, any arrangement of components to achieve the same functionality is effectively "associated" such that the desired functionality is achieved. Hence, any two components herein combined to achieve a particular functionality can be seen as "associated with" each other such that the desired functionality is achieved, irrespective of architectures or intermedial components. Likewise, any two components so associated can also be viewed as being "operably connected", or "operably coupled", to each other to achieve the desired functionality, and any two components capable of being so associated can also be viewed as being "operably couplable", to each other to achieve the desired functionality. Specific examples of operably couplable include but are not limited to physically mateable and/or physically interacting components.

[0178] With respect to the use of substantially any plural and/or singular terms herein, those having skill in the art can translate from the plural to the singular and/or

from the singular to the plural as is appropriate to the context and/or application. The various singular/plural permutations may be expressly set forth herein for sake of clarity.

[0179] It will be understood by those within the art that, in general, terms used herein, and especially in the appended claims (e.g., bodies of the appended claims) are generally intended as "open" terms (e.g., the term "including" should be interpreted as "including but not limited to," the term "having" should be interpreted as "having at least," the term "includes" should be interpreted as "includes but is not limited to," etc.). It will be further understood by those within the art that if a specific number of an introduced claim recitation is intended, such an intent will be explicitly recited in the claim, and in the absence of such recitation no such intent is present. For example, as an aid to understanding, the following appended claims may contain usage of the introductory phrases "at least one" and "one or more" to introduce claim recitations. However, the use of such phrases should not be construed to imply that the introduction of a claim recitation by the indefinite articles "a" or "an" limits any particular claim containing such introduced claim recitation to embodiments containing only one such recitation, even when the same claim includes the introductory phrases "one or more" or "at least one" and indefinite articles such as "a" or "an" (e.g., "a" and/or "an" should typically be interpreted to mean "at least one" or "one or more"); the same holds true for the use of definite articles used to introduce claim recitations. In addition, even if a specific number of an introduced claim recitation *is* explicitly recited, those skilled in the art will recognize that such recitation should typically be interpreted to mean *at least* the recited number (e.g., the bare recitation of "two recitations," without other modifiers, typically means *at least* two recitations, or *two or more* recitations). Furthermore, in those instances where a convention analogous to "at least one of A, B, and C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, and C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). In those instances where a convention analogous to "at least one of A, B, or C, etc." is used, in general such a construction is intended in the sense one having skill in the art would understand the convention (e.g., "a system having at least one of A, B, or C" would include but not be limited to systems that have A alone, B alone, C alone, A and B together, A and C together, B and C together, and/or A, B, and C together, etc.). It will be

further understood by those within the art that virtually any disjunctive word and/or phrase presenting two or more alternative terms, whether in the description, claims, or drawings, should be understood to contemplate the possibilities of including one of the terms, either of the terms, or both terms. For example, the phrase "A or B" will be understood to include the possibilities of "A" or "B" or "A and B."

[0180] While various aspects and embodiments have been disclosed herein, other aspects and embodiments will be apparent to those skilled in the art. The various aspects and embodiments disclosed herein are for purposes of illustration and are not intended to be limiting, with the true scope and spirit being indicated by the following claims.

[0181] While the above detailed description has shown, described and pointed out novel features of the invention as applied to various embodiments, it will be understood that various omissions, substitutions, and changes in the form and details of the device or process illustrated may be made by those skilled in the art without departing from the spirit of the invention. Further, many variations on the theme have yet to been conjured, and, as will be recognized, the present invention may be embodied within a form that does not provide all of the features and benefits set forth herein, as some features may be used or practiced separately from others.

WHAT IS CLAIMED IS:

1. A peripheral device configured to interact with a computer, the peripheral device comprising:

at least one display;

a housing configured to support the display;

a memory, wherein the memory is configured to store a display content; and,

a processor coupled to the display and to the memory, wherein the processor is configured to output the display content to the display.

2. The peripheral device of Claim 1 wherein processor is configured to receive the display content from the computer.

3. The peripheral device of Claim 1 or 2, further comprising an input mechanism coupled to the processor, the input mechanism configured to receive an input from a user.

4. The peripheral device of Claim 3, wherein the input device is a button.

5. The peripheral device of Claim 3, wherein the input device is a touch-screen.

6. The peripheral device of Claim 3, wherein the input device is a knob.

7. The peripheral device of Claim 3, wherein the input device is a slide.

8. The peripheral device of Claim 3, wherein the input mechanism is further configured to communicate the user input to the processor and the processor is further configured to transmit the user input to the computer.

9. The peripheral device of Claim 8, wherein the processor is further configured to transmit an identifier identifying the display content to the computer.

10. The peripheral device of Claim 9, wherein the processor is configured to determine a requested action based, at least in part, on the user input and to transmit an indication of the requested action to the computer.

11. The peripheral device of Claim 10, wherein the requested action comprises displaying the display content on a primary display coupled to the computer.

12. The peripheral device of Claim 11, wherein the requested action comprises transmitting a different display content to the peripheral device and wherein the processor is configured to output the different display content to the display.

12. The peripheral device of Claim 3, wherein the input device is a biometric scanner.

13. The peripheral device of Claim 12, wherein the biometric scanner is a fingerprint detector.

14. The peripheral device of any of Claims 1-13, wherein the memory is configured to store a content source identifier and wherein the processor is configured to transmit the content source identifier to the computer.

15. The peripheral device of Claim 14, wherein the content source identifier comprises a uniform resource locator.

16. The peripheral device of any of Claims 1-15, the peripheral further comprising a connector, the connector configured to mate with a corresponding connector on a primary display of the computer.

17. The peripheral device of Claim 16, wherein the connector comprises a threaded fastener.

18. The peripheral device of Claim 16, wherein the connector comprises a clip.

19. The peripheral device of Claim 16, wherein the connector comprises a joint.

20. The peripheral device of Claim 16, wherein the connector comprises an interlocking sleeve.

21. The peripheral device of any of Claims 1-20, wherein a form factor of the housing is associated with a theme.

22. The peripheral device of Claim 21, wherein the display content is associated with the theme.

23. The peripheral of any of Claims 1-22, wherein the display content is selected based, at least in part, on a user selection.

24. The peripheral of any of Claims 1-23, wherein the display content comprises an advertisement.

25. The peripheral device of any of Claims 1-24, wherein the peripheral device is a computer mouse.

26. The peripheral device of any of Claims 1-24, wherein the peripheral device is a computer keyboard.

27. The peripheral device of any of Claims 1-24, wherein the peripheral device is an auxiliary monitor.

28. The peripheral device of any of Claims 1-24, wherein the peripheral device is a handheld computing device.

29. The peripheral device of any of Claims 1-27, wherein the memory is configured to store computer readable instructions for interacting with the peripheral device and wherein the processor is configured to transmit the computer readable instructions to the computer.

30. The peripheral device of any of Claims 1-27, wherein the memory is configured to store a uniform resource locator (URL), wherein the URL is associated with computer readable instructions for interacting with the peripheral device and wherein the processor is configured to transmit the URL to the computer.

31. An apparatus for facilitating the display of media, the apparatus comprising:

a primary display;

a memory;

an input mechanism; and,

a processor coupled to the memory and to the display, wherein the processor is configured receive a connection indication from a peripheral device, to obtain display content, and to transmit the display content to the peripheral device.

32. The apparatus of Claim 31, wherein the memory is configured to store one or more display content options and wherein the processor is configured to select the display content from the one or more display content options.

33. The apparatus of Claim 32, wherein the processor is configured to select the display content based, at least in part, on a user input received via the input mechanism.

34. The apparatus of Claim 32, wherein the memory is configured to store a user display content preference, wherein the processor is configured to receive a user identification, to determine an association between the user display content preference and the user identification, and to select the display content based, at least in part, on the user display content preference.

35. The apparatus of Claim 34, where in the user identification is received via the input mechanism.

36. The apparatus of Claim 34, where in the user identification is received via the peripheral device.

37. The apparatus of any of Claims 31-36, wherein the processor is configured to receive from the peripheral device a content source identifier and wherein obtaining the display content comprises accessing a content source associated with the content source identifier.

38. The apparatus of Claim 37, wherein the content source identifier is a uniform resource locator.

39. The apparatus of any of Claims 31-38, wherein the display content comprises an advertisement.

40. The apparatus of any of Claims 31-38, wherein the display content comprises an e-mail or instant message.

41. The apparatus of any of Claims 31-40, wherein the processor is configured to receive from the peripheral device an indication of a user interaction with the display content.

42. The apparatus of Claim 41, wherein the processor is configured to output the display content to the primary display in response to the user interaction indication.

43. The apparatus of Claim 41, wherein the processor is configured to determine a different content selection and to output the different display content to the peripheral device in response to the user interaction indication.

44. The apparatus of Claim 41, wherein the processor is configured to obtain display content by receiving an incoming content from a content source.

45. The apparatus of Claim 44, wherein the incoming content is an e-mail message.

46. The apparatus of Claim 44, wherein the incoming content is an instant message.

47. A method, operating on a peripheral device, of displaying content, the method comprising:

transmitting a connection indication from the peripheral to a computer;

receiving, at the peripheral, a display content from the computer; and,

displaying, at the peripheral, the display content.

48. The method of Claim 47, further comprising receiving, at the peripheral, a user input via an input mechanism and transmitting the user input to the computer.

49. The method of Claim 48, wherein the display content is selected based, at least in part, on the user input.

50. The method of Claim 47 or 48, further comprising transmitting an identifier identifying the display content to the computer.

51. The method of Claim 48, further comprising determining a requested action based, at least in part, on the user input and transmitting an indication of the requested action to the computer.

52. The method of Claim 51, wherein the requested action comprises displaying the display content on a primary display coupled to the computer.

53 The method of Claim 51, wherein the requested action comprises transmitting a different display content to the peripheral device from the computer and the method further comprises displaying the different content.

54. The method of any of Claims 47-53, further comprising transmitting a content source identifier to the computer.

55. The method of Claim 54, wherein the content source identifier comprises a uniform resource locator.

56. The method of any of Claims 47-55, further comprising physically connecting the peripheral device to a primary display of the computer.

57. The method of any of Claims 47-56, further comprising providing a housing for the peripheral device, wherein a form factor of the housing is associated with a theme.

58. The method of Claim 57, wherein the display content is associated with the theme.

59. The peripheral of any of Claims 47-58, wherein the display content comprises an advertisement.

60. The method of any of 47-59, further comprising transmitting computer readable instructions for interacting with the peripheral device to the computer.

61. The method of any of Claims 47-59, further comprising transmitting a uniform resource locator (URL) to the computer, wherein the URL is associated with computer readable instructions for interacting with the peripheral device.

62. A method, operating on a computer, of displaying content on a peripheral device, the method comprising:

receiving, at the computer, a connection indication from a peripheral device;

obtaining a display content; and,

transmitting the display content from the computer to the peripheral device.

63. The method of Claim 62, wherein obtaining the display content further comprises determining one or more display content options and selecting the display content from the one or more display content options.

64. The method of Claim 62 or 63, further comprising receiving, at the computer, a user input, wherein obtaining the display content the display content further comprises selecting the display content based, at least in part, on the user input.

65. The method of Claim 62, further comprising:

determining a user display content preference;

receiving, at the computer, a user identification; and

determining an association between the user display content preference and the user identification, wherein obtaining the display content comprises selecting the display content based, at least in part, on the user display content preference.

66. The method of Claim 65, wherein the user identification is received from the peripheral device.

67. The method of Claims 62, further comprising, receiving from the peripheral device, a content source identifier, wherein obtaining the display content comprises accessing a content source associated with the content source identifier.

68. The method of Claim 67, wherein the content source identifier is a uniform resource locator.

69. The method of any of Claims 62-68, wherein the display content comprises an advertisement.

70. The method of any of Claims 62-69, further comprising receiving, at the computer, an indication of a user interaction with the display content from the peripheral device.

71. The method of Claim 70, further comprising displaying the display content on a primary display associated with the computer in response to the user interaction indication.

72. The method of Claim 70, further comprising obtaining a different content selection and transmitting the different display content from the computer to the peripheral device in response o the user interaction indication.

73. The method of any of Claims 62-72, wherein obtaining the display content further comprises receiving an incoming content from a content source.

74. The method of Claim 73, wherein the incoming content is an e-mail message.

75. The method of Claim 73, wherein the incoming content is an instant message.

76. A display device, the display device comprising:

a display;

a positioning member coupled to the display; and

a connector, coupled to the positioning member, the connector configured to connect to a corresponding connector disposed on the housing of a computer display.

77. The device of Claim 76, wherein the positioning member is configured to extend telescopically.

78. The device of Claim 76, wherein the positioning member is configured to rotate.

79. The device of Claim 76, wherein the positioning member is deformable.

80. The device of Claim 76, wherein the positioning member comprises one or more joints.

81. The device of Claim 76, wherein the display is configured to rotate relative to the positioning member.

82. The device of Claim 76, wherein the connector comprises an anchor configured to support the weight of the display and the positioning member.

83. The device of Claim 76, wherein the connector comprises a USB connector.

84. The device of any of Claims 76-83, wherein the display comprises a peripheral device of any of Claims 1-15, 21-24, 28, and 29.

85. The device of any of Claims 76-84, wherein the connector is configured to attach to the perimeter of a display region of a laptop, netbook, mini, PDA, handheld or to the perimeter of a desktop monitor.

86. A method of displaying media, comprising:

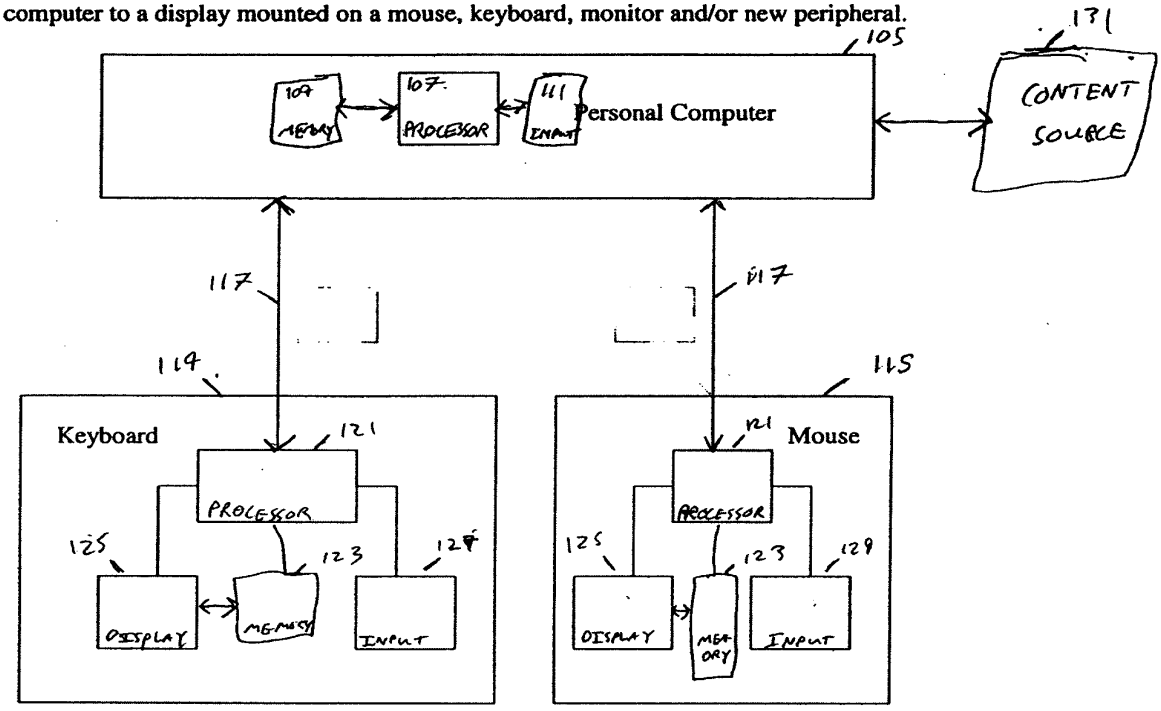
providing a peripheral device of any of Claims 1-15, 21-24, 28, 29 and 76-85;

connecting the peripheral device to the perimeter of a desktop, netbook, mini, PDA, handheld, or laptop monitor; and

displaying media on the peripheral device.

87. The method of Claim 86, wherein the desktop, netbook, mini, PDA, handheld, or laptop comprises an apparatus of any of Claims 31-46.

FIGURE 1: A display mechanism to allow an end user to customize their computer mouse, keyboard, monitor and/or new peripheral by sending display data from a personal computer to a display mounted on a mouse, keyboard, monitor and/or new peripheral.



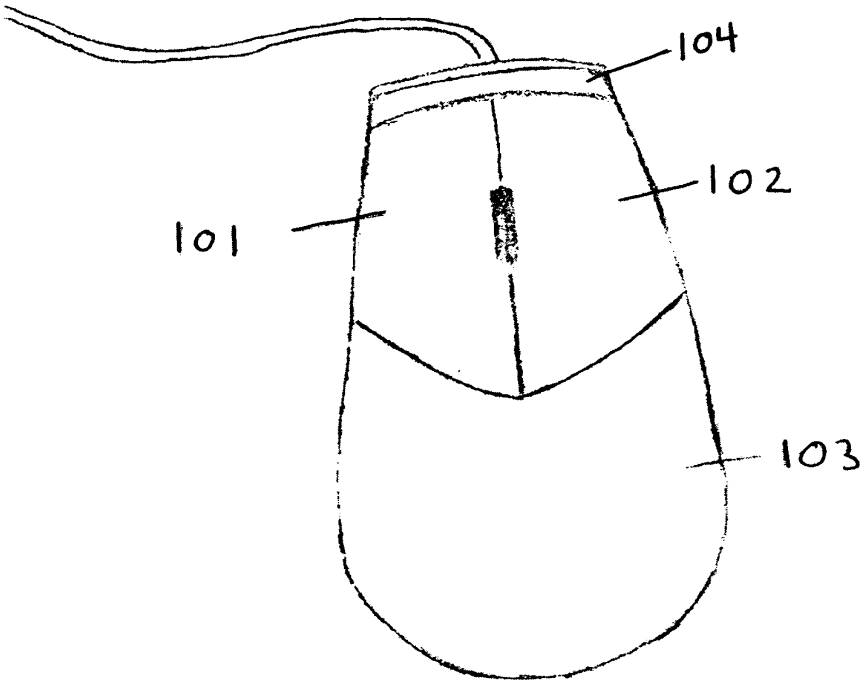


FIG. 2A

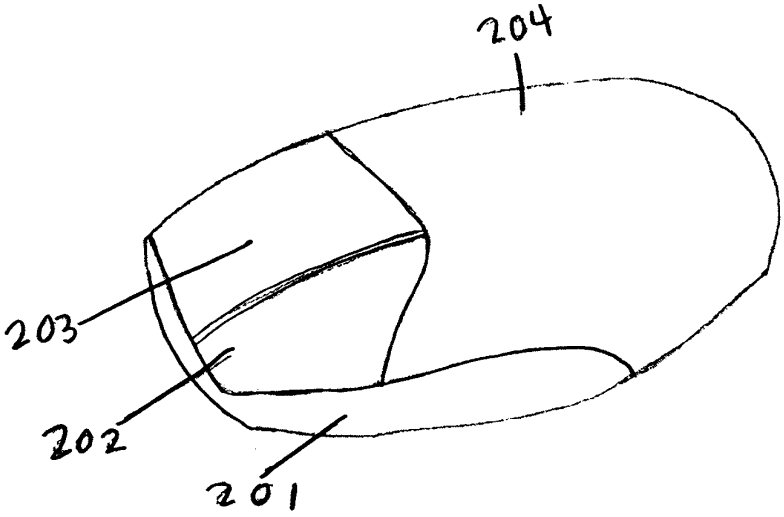
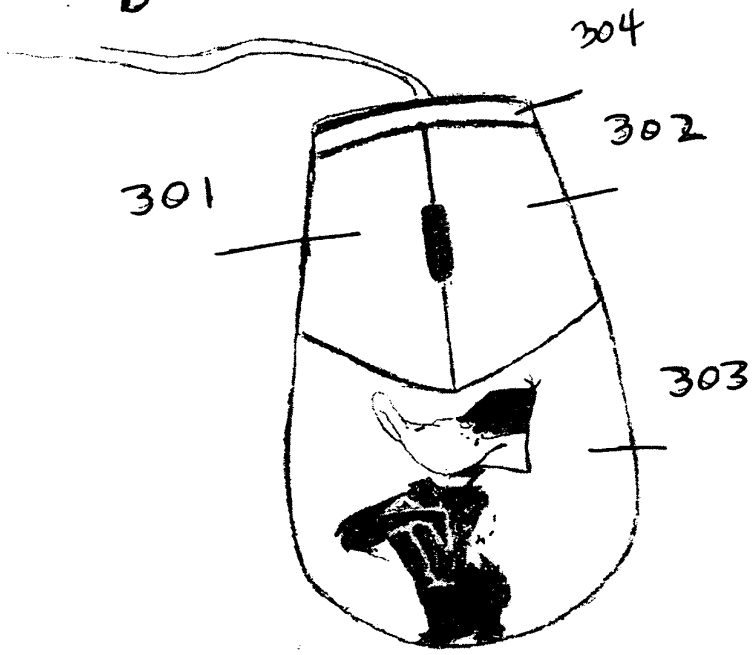


FIG. 2B

Fig. 3A



Fig 3 - B



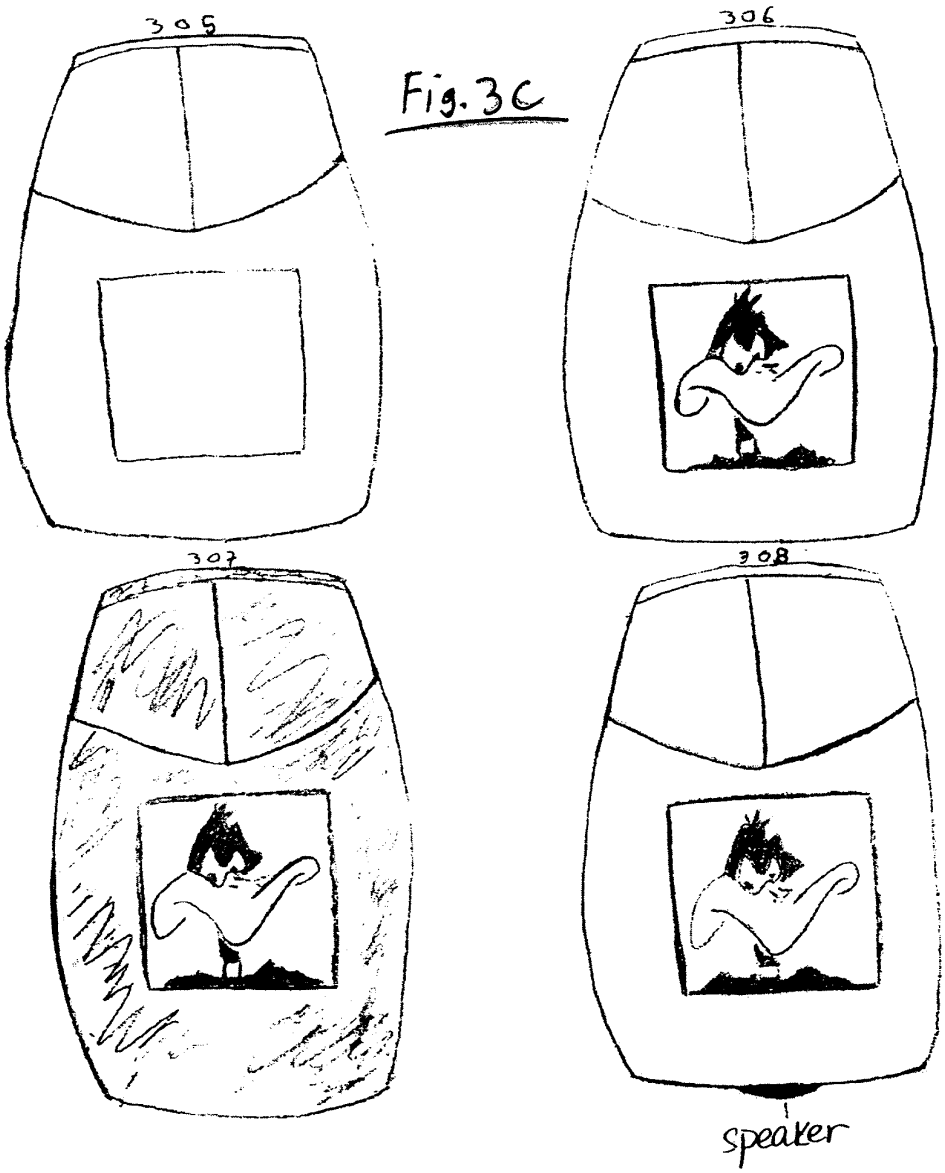


Fig. 3C

Fig 3D

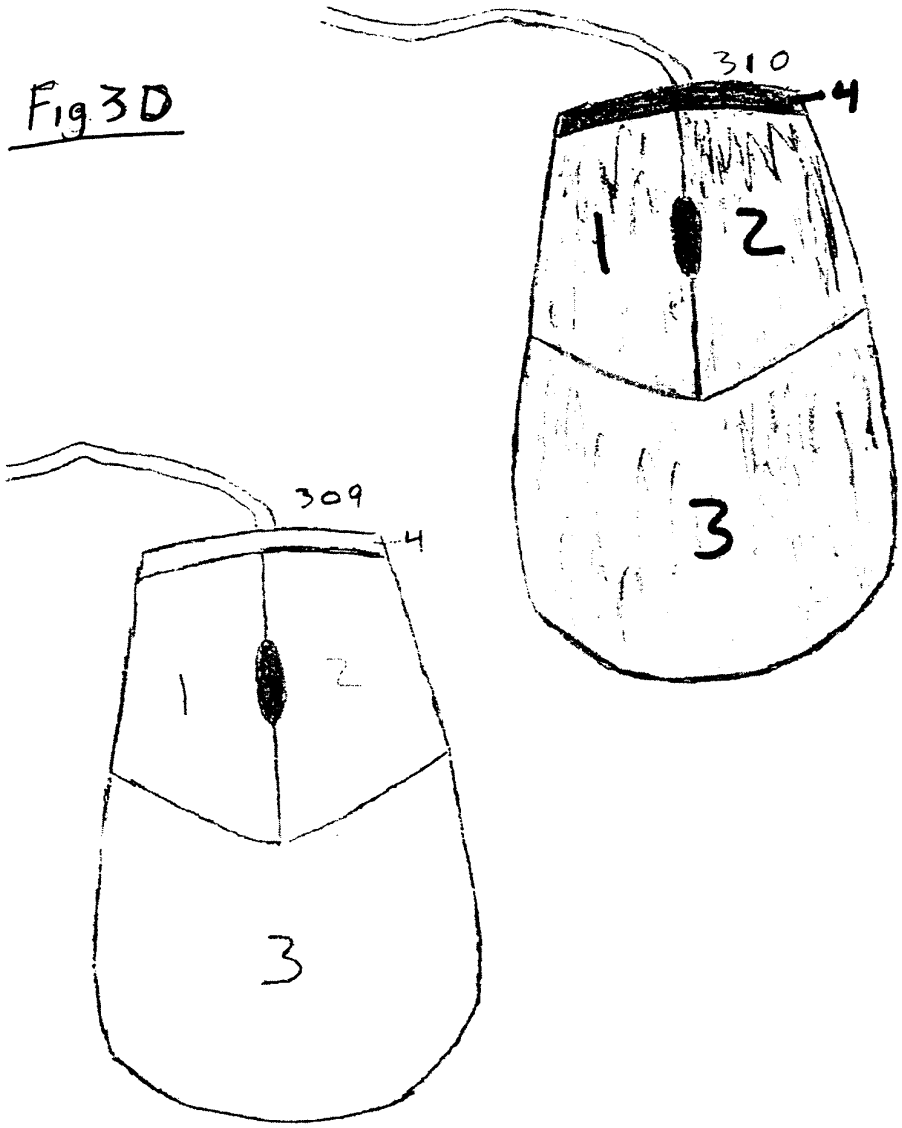


Fig. 3E

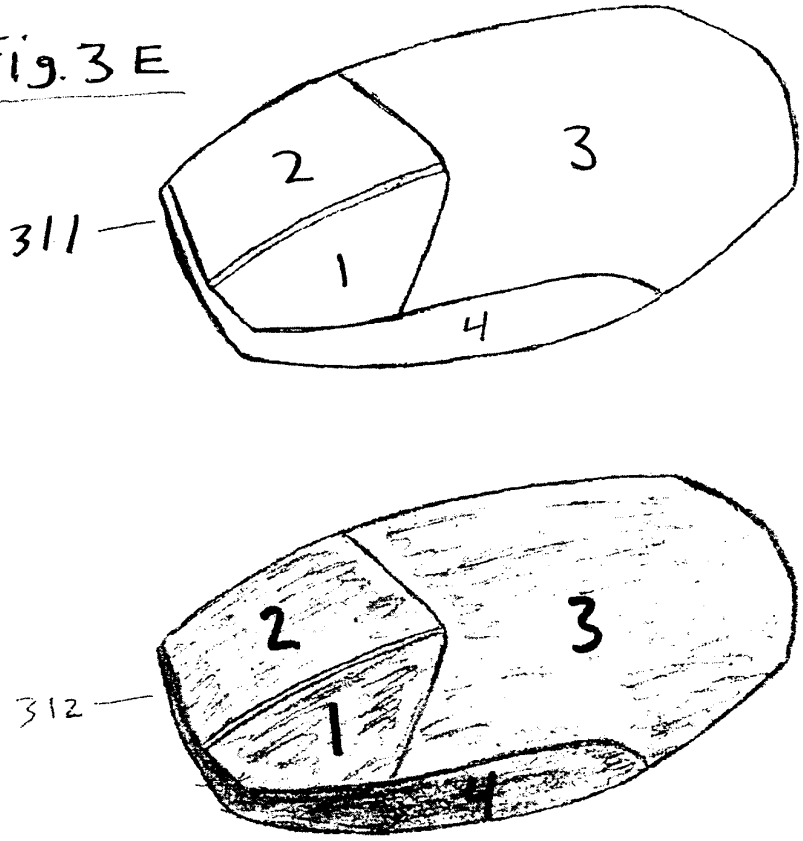


Fig 3F

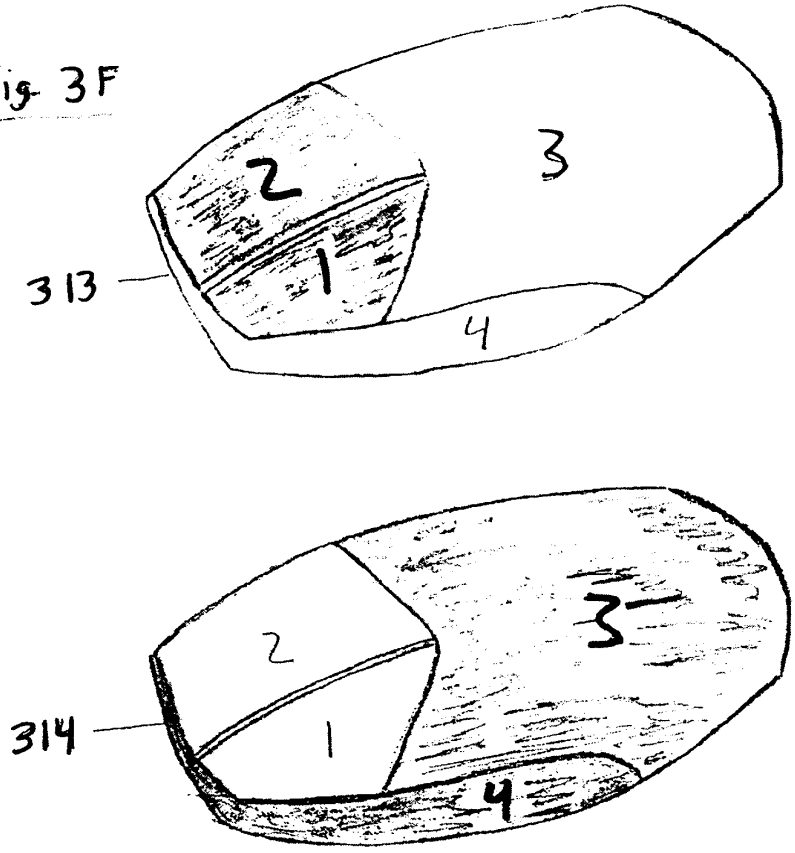
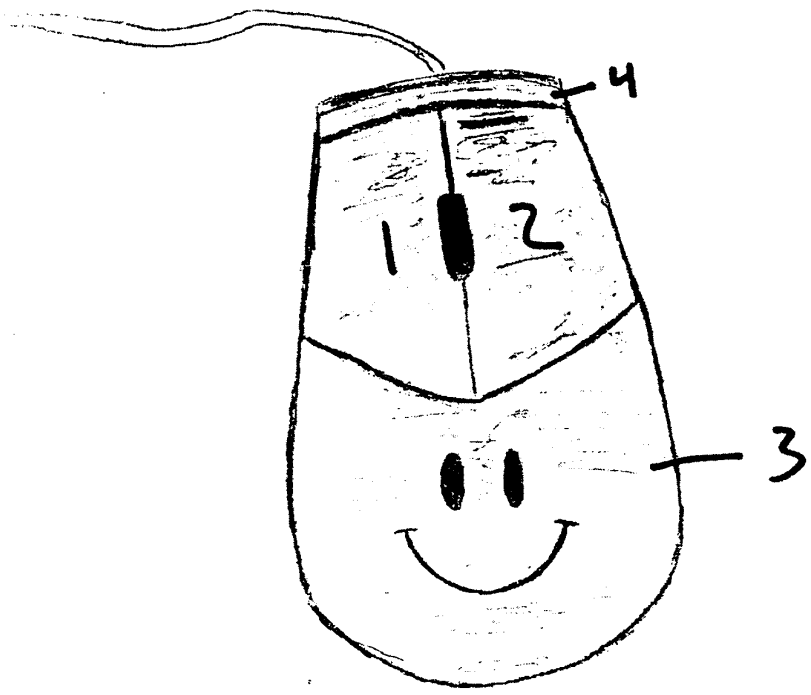


Fig. 3G



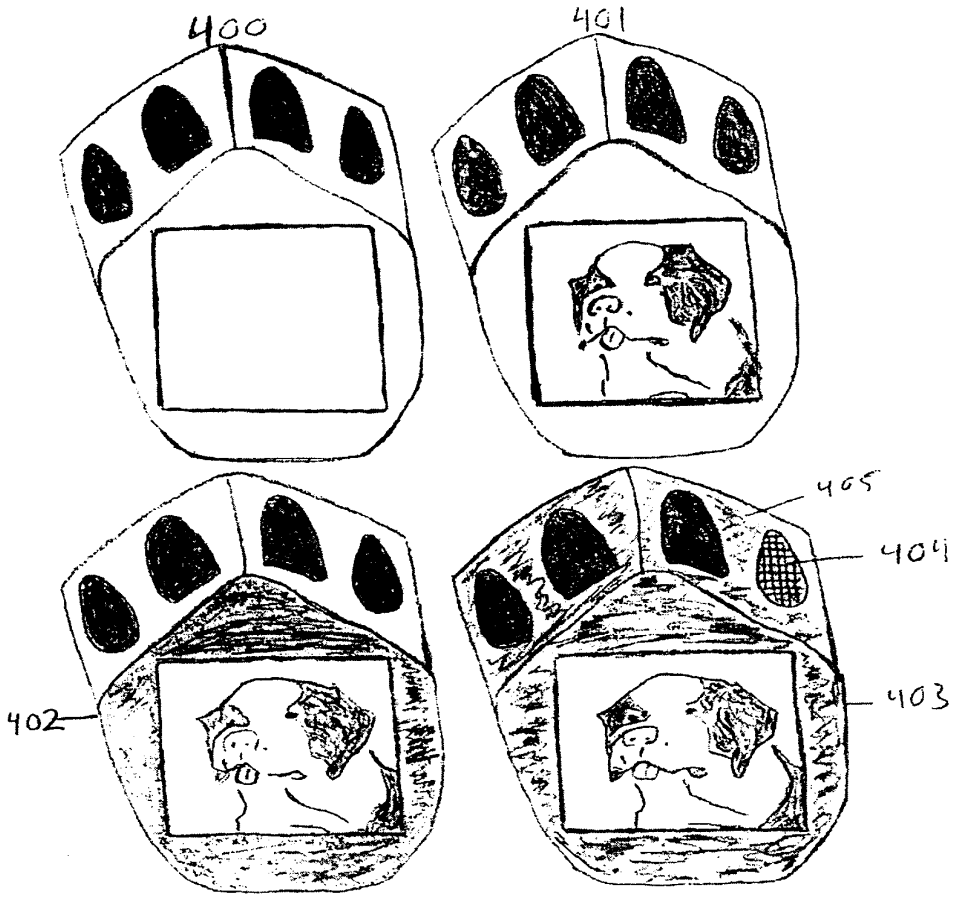


Fig. 4A

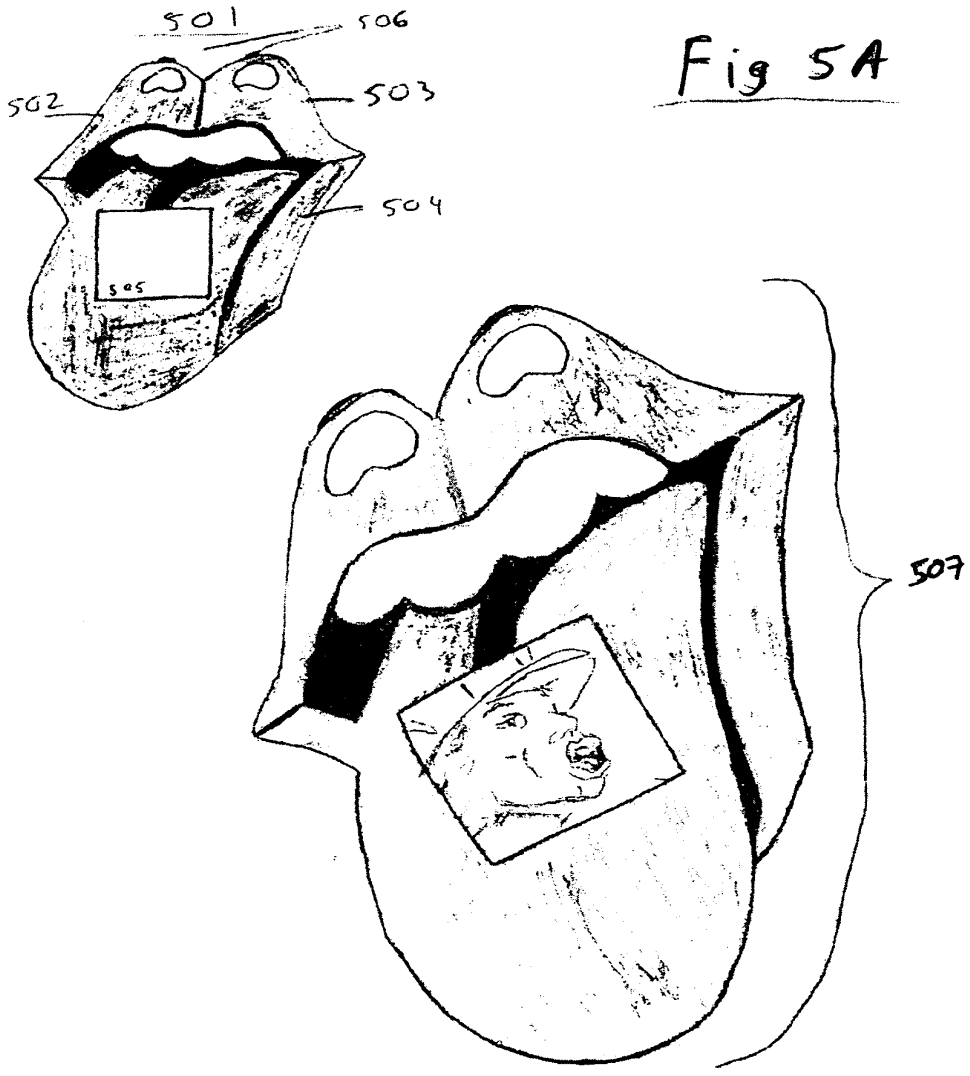


Fig 5A

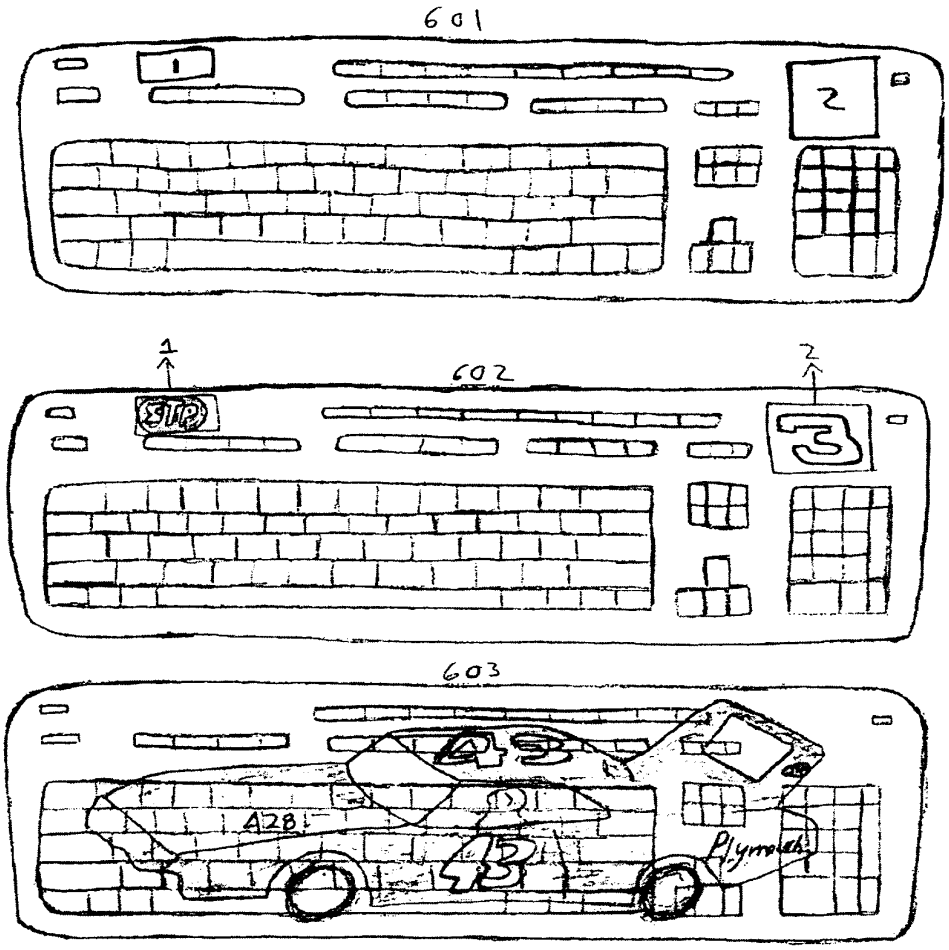


Fig 6A

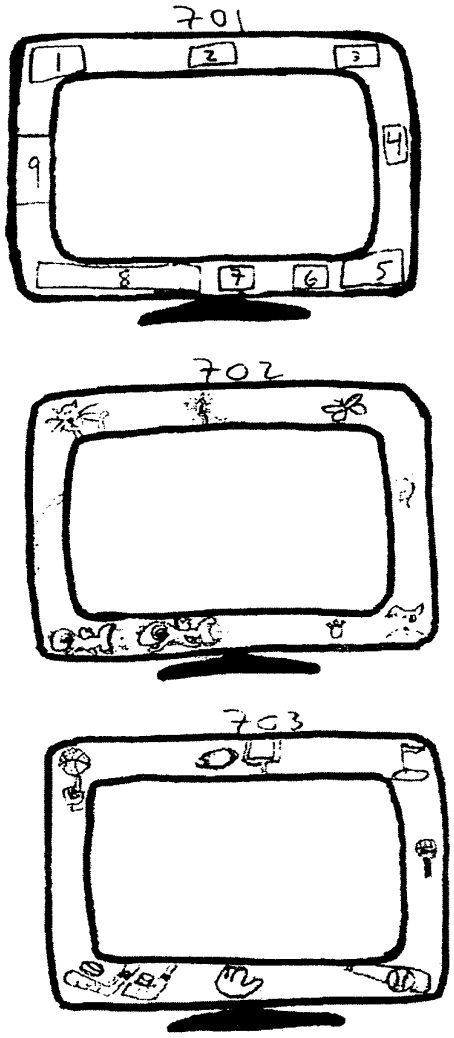


Fig. 7A

Fig. 8A

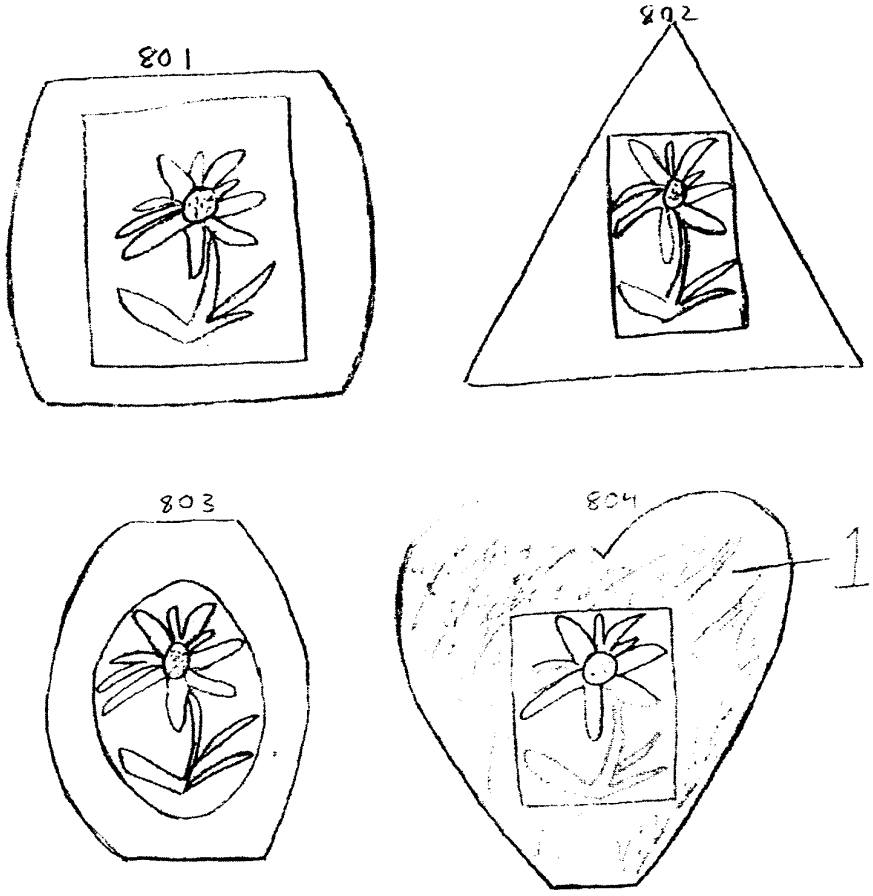
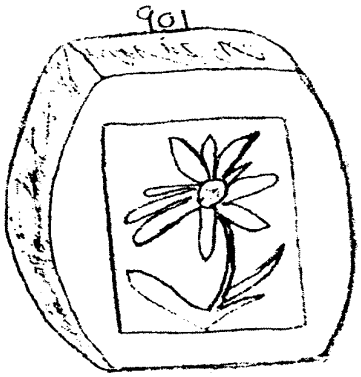
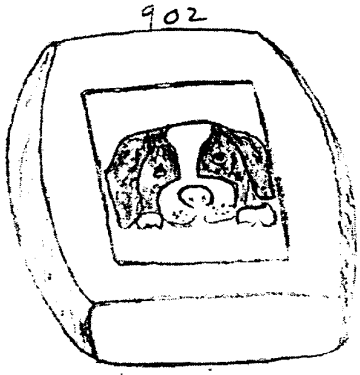


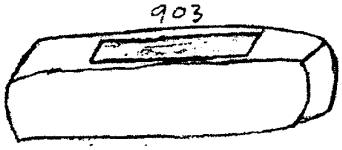
Fig 9A



Standing Frontal view

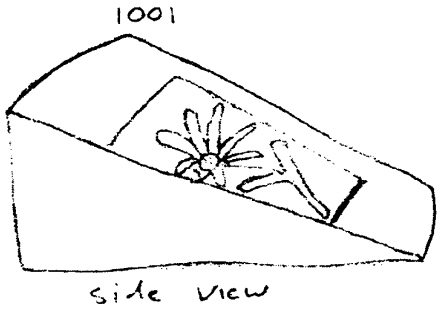


Lying Down Frontal View



Lying Down Side View

Fig. 10A



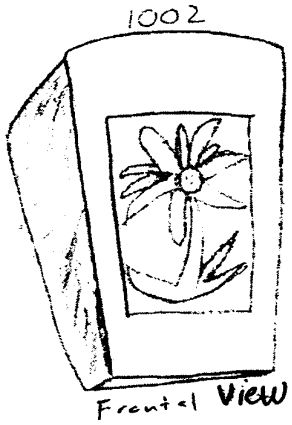
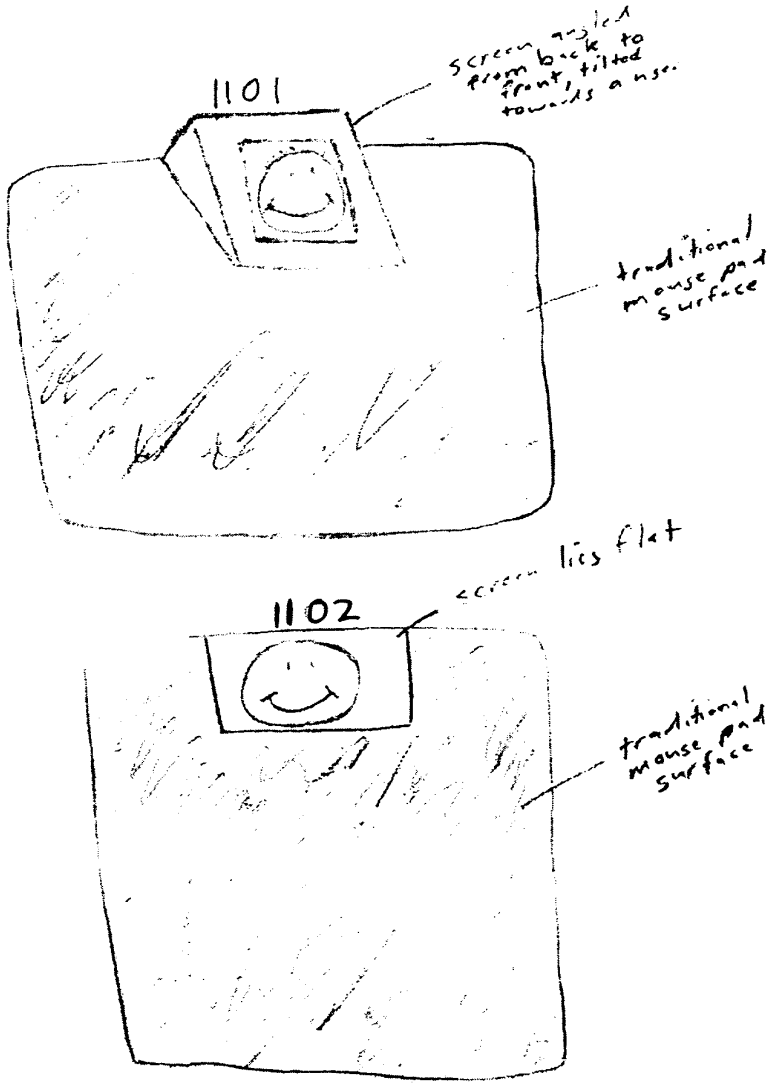


Fig 11A


1101
screen angled from back to front, tilted towards a user
traditional mouse pad surface
1102
screen lies flat
traditional mouse pad surface

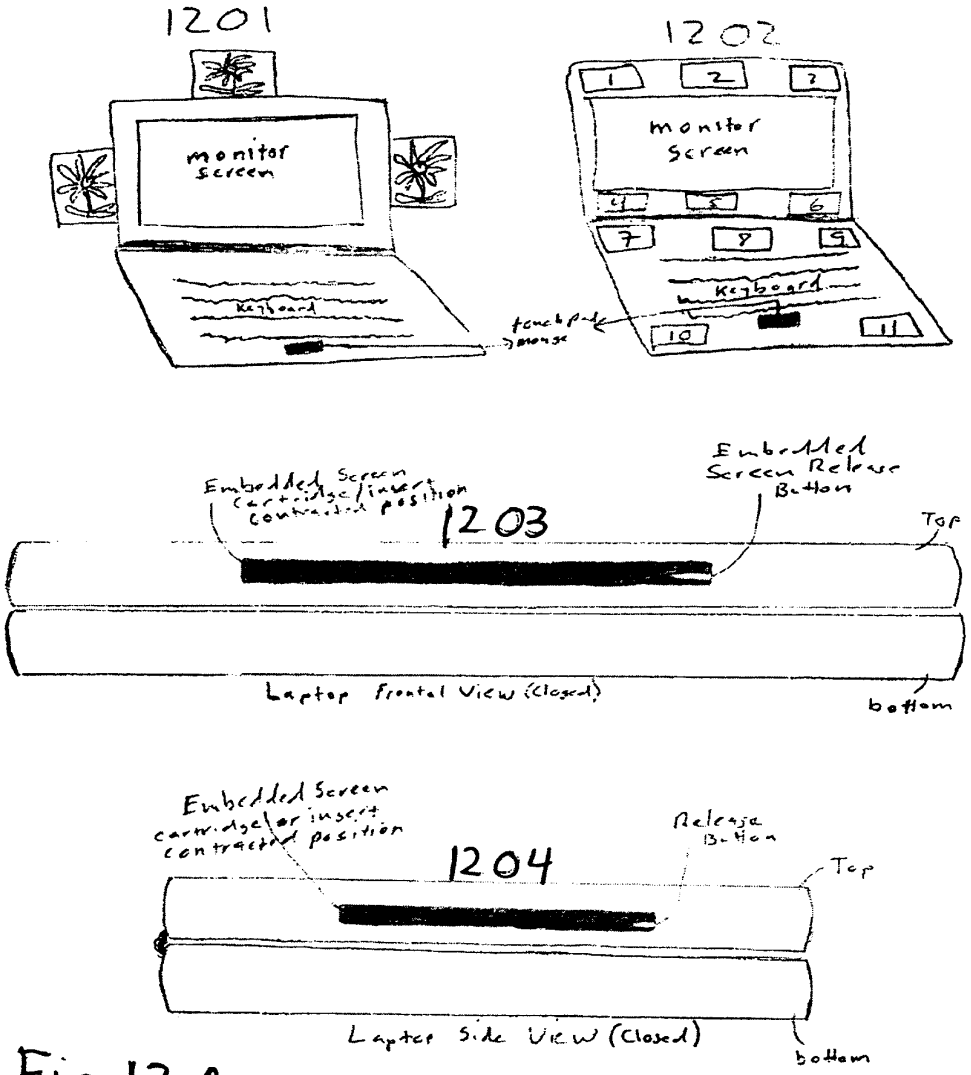

1201
monitor screen
keyboard
touch pad
mouse
1202
monitor screen
keyboard
Embedded Screen cartridge/insert contracted position
1203
Embedded Screen Release Button
Top
Laptop Frontal View (Closed)
bottom
Embedded Screen cartridge/insert contracted position
1204
Release Button
Top
Laptop Side View (Closed)
bottom

Fig. 12A

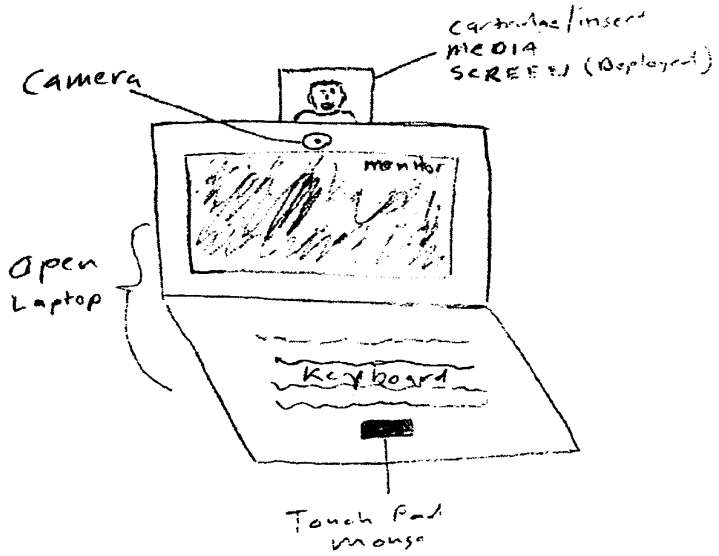


Fig. 13A

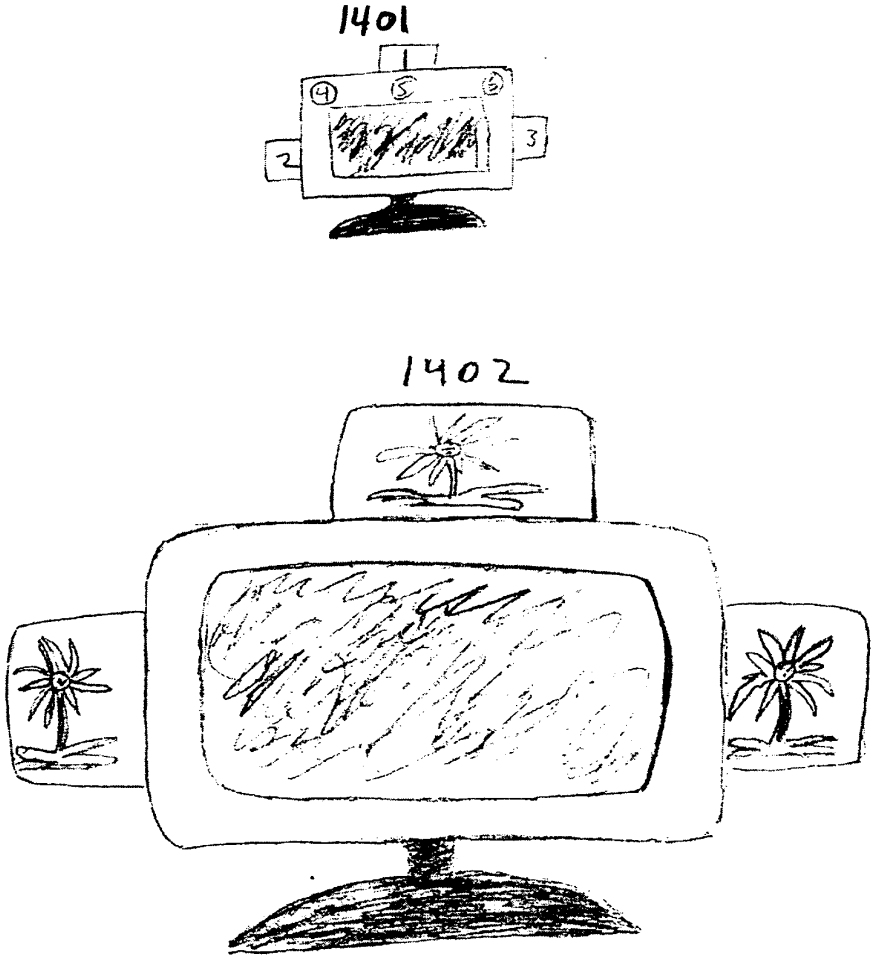


Fig. 14A

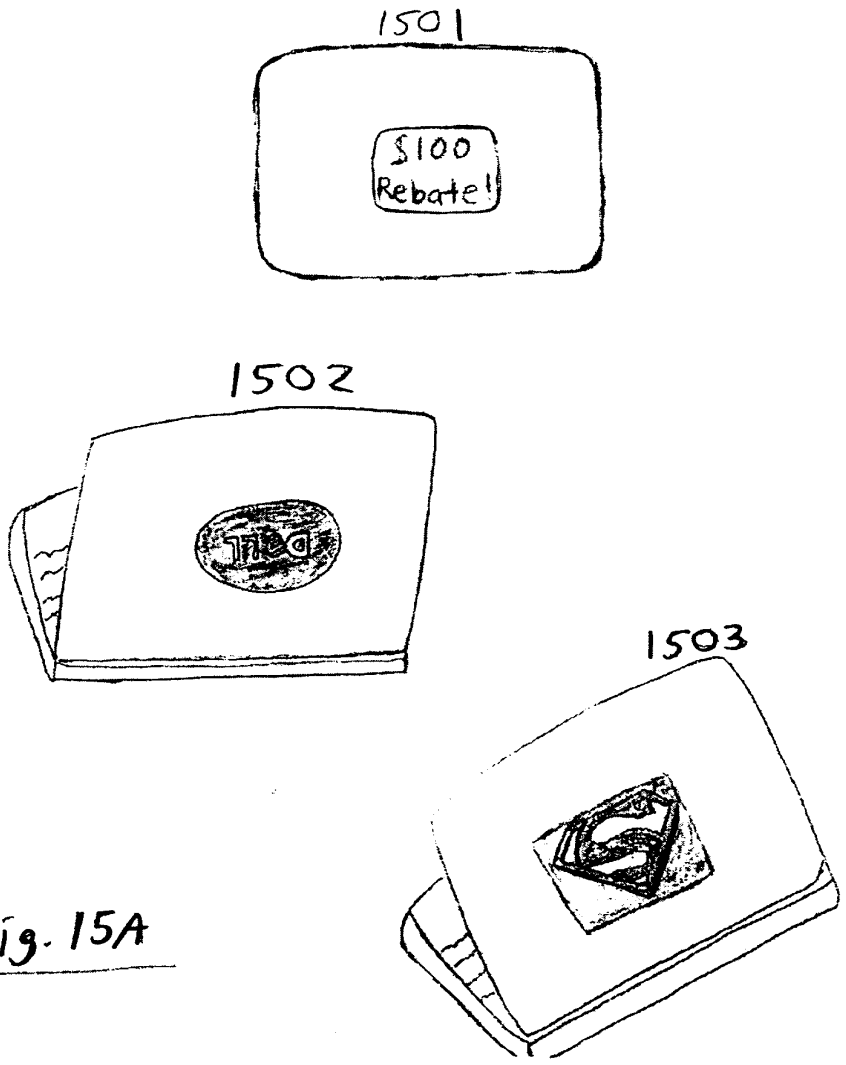


Fig. 15A

Fig. 16A

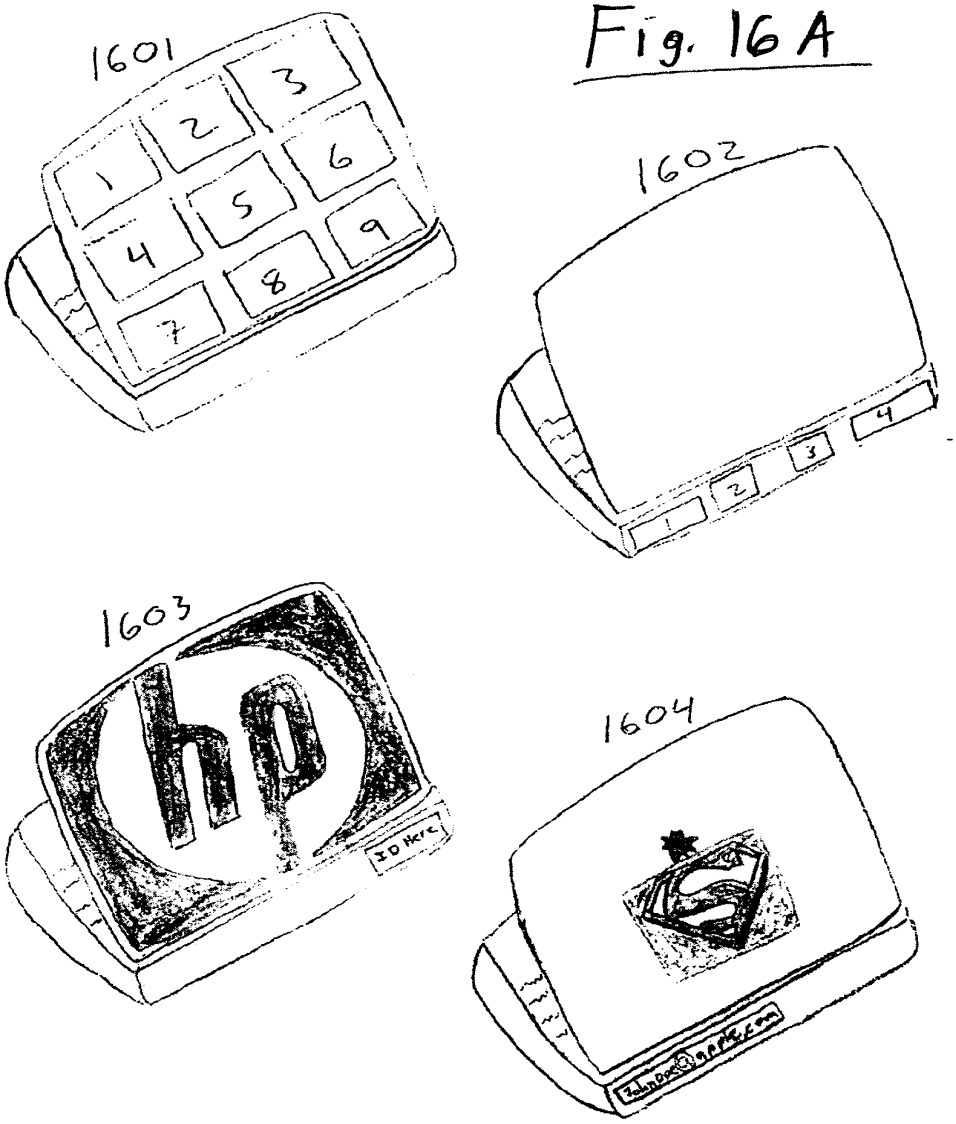


Fig. 17A

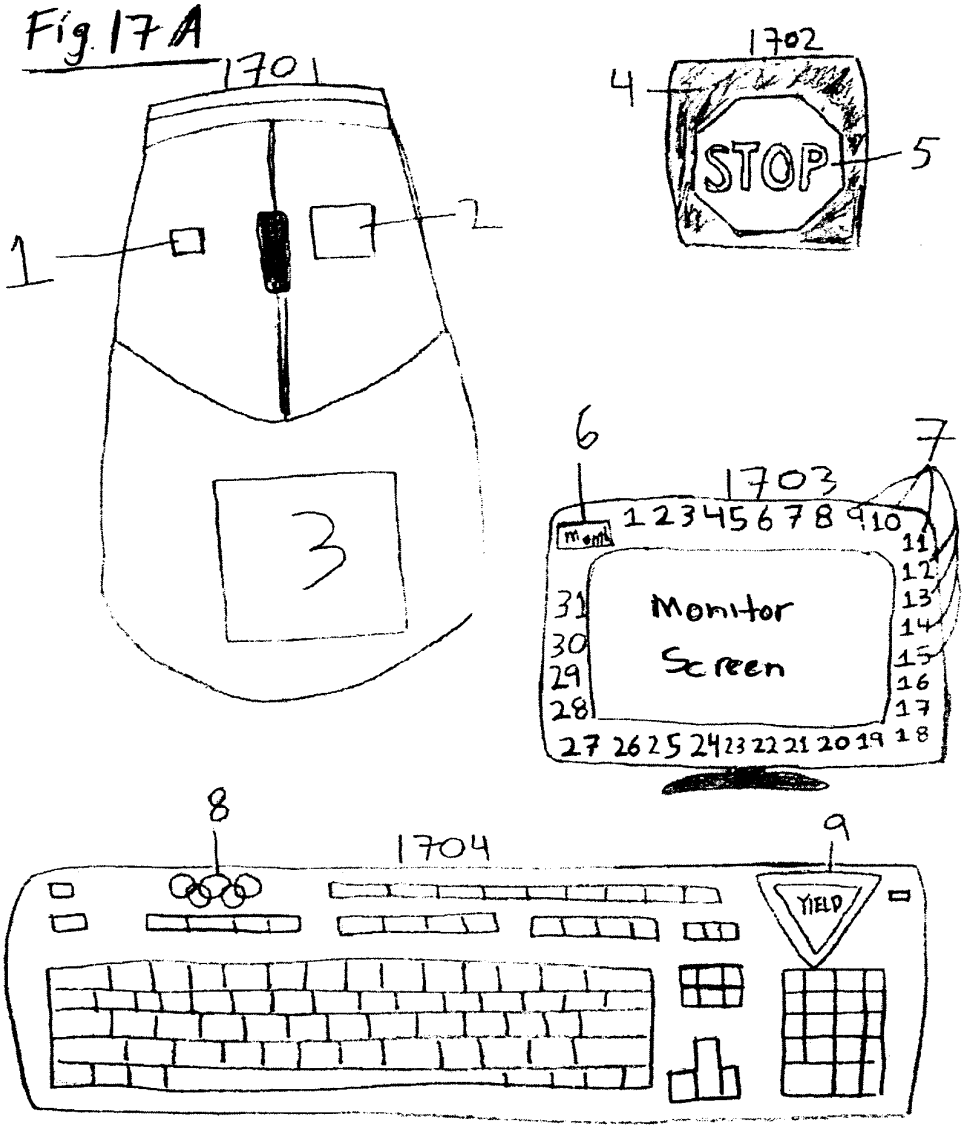
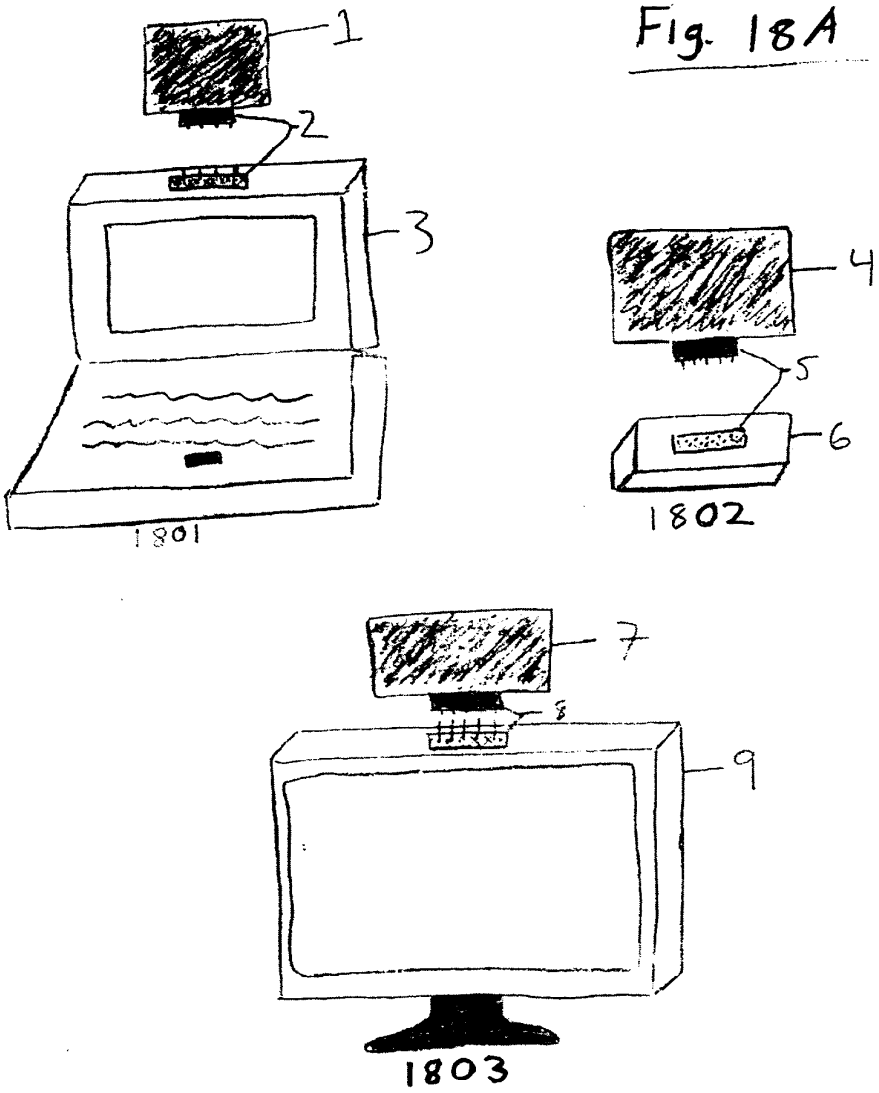

1701
1
2
3
1702
4
STOP
5
6
7
1703
1 2 3 4 5 6 7 8 9 10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
Monitor Screen
8
1704
9
YIELD

Fig. 18A



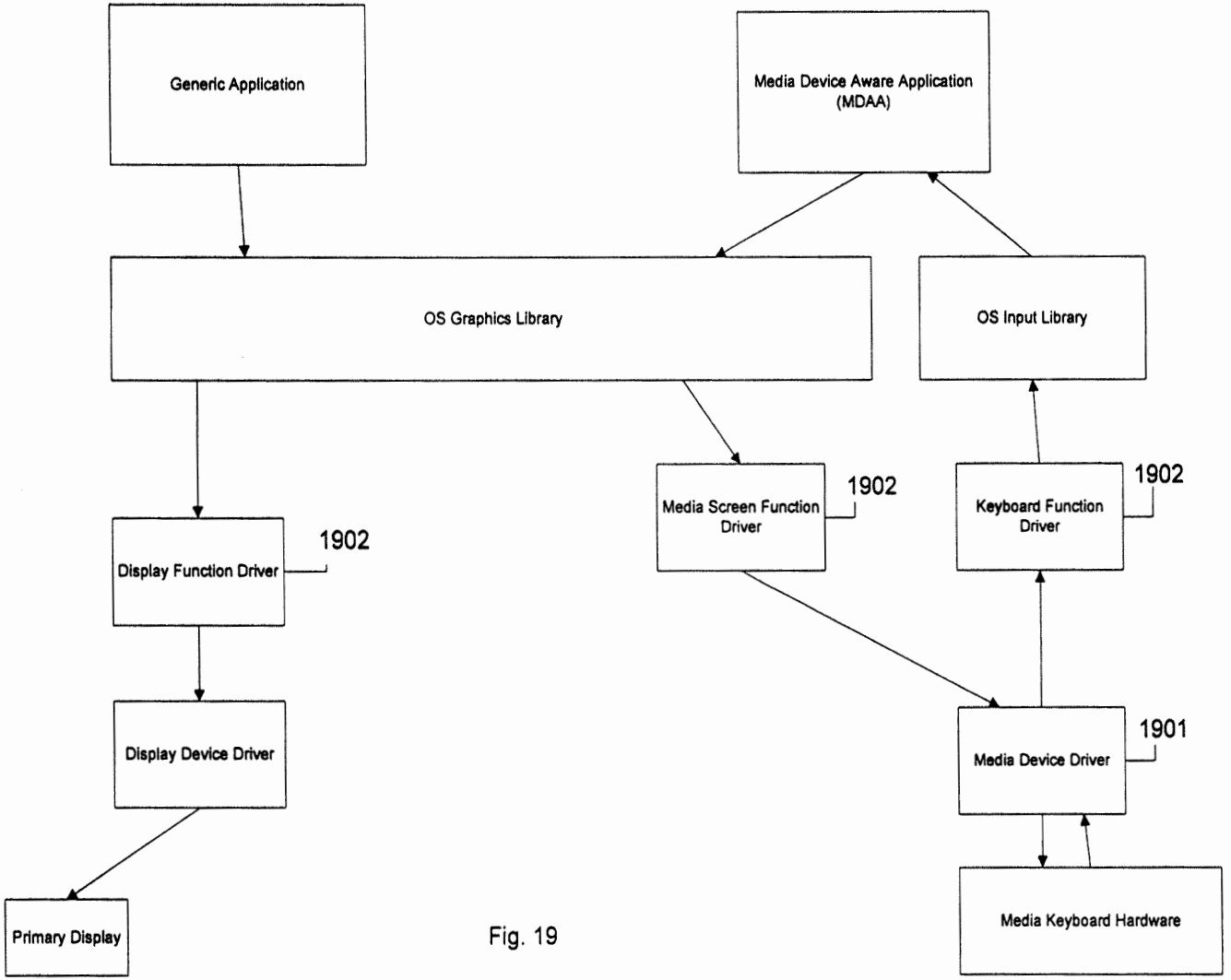

Generic Application
Media Device Aware Application (MDAA)
OS Graphics Library
OS Input Library
Media Screen Function Driver
1902
Keyboard Function Driver
1902
Display Function Driver
1902
Display Device Driver
Media Device Driver
1901
Primary Display
Media Keyboard Hardware

Fig. 19

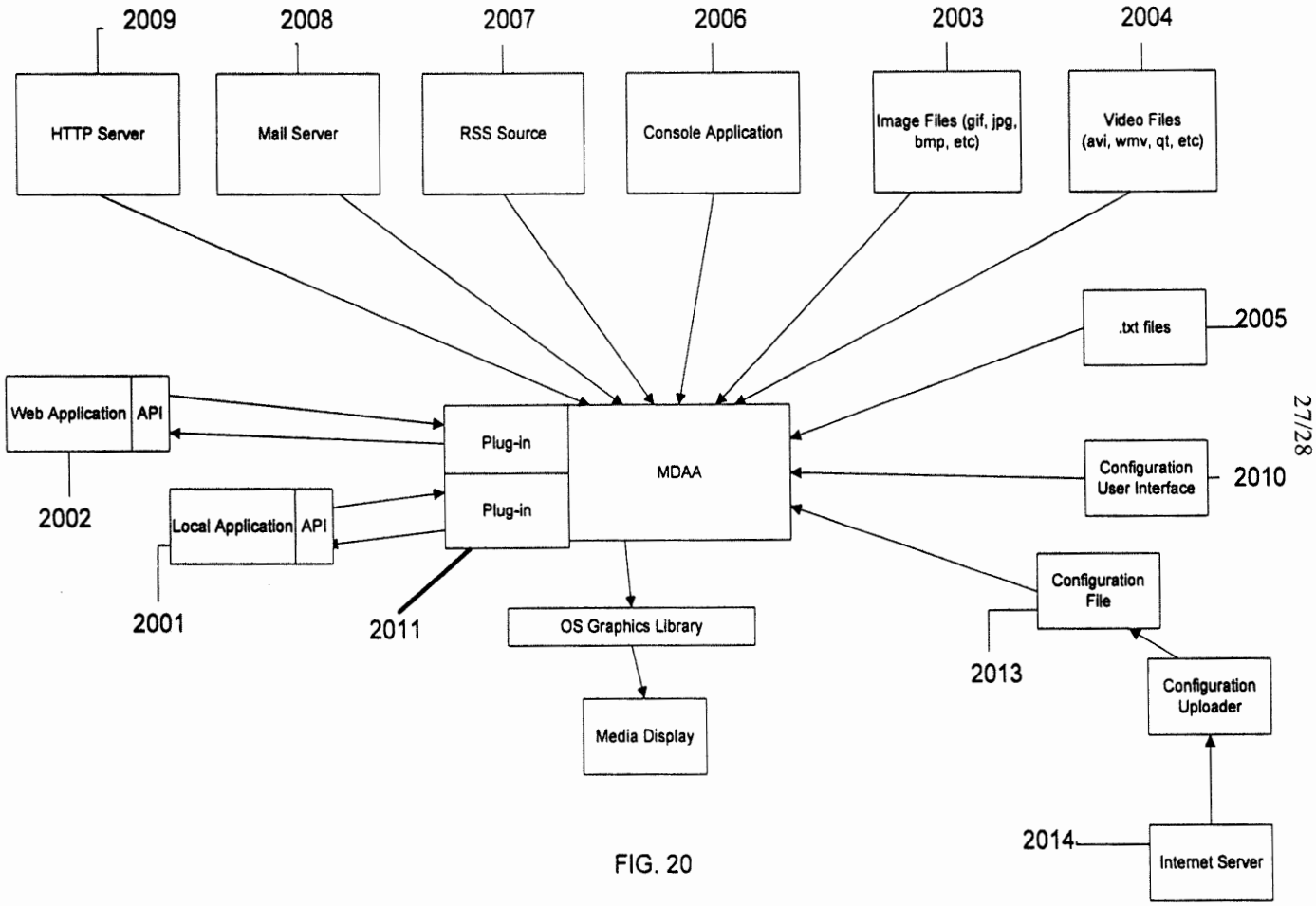
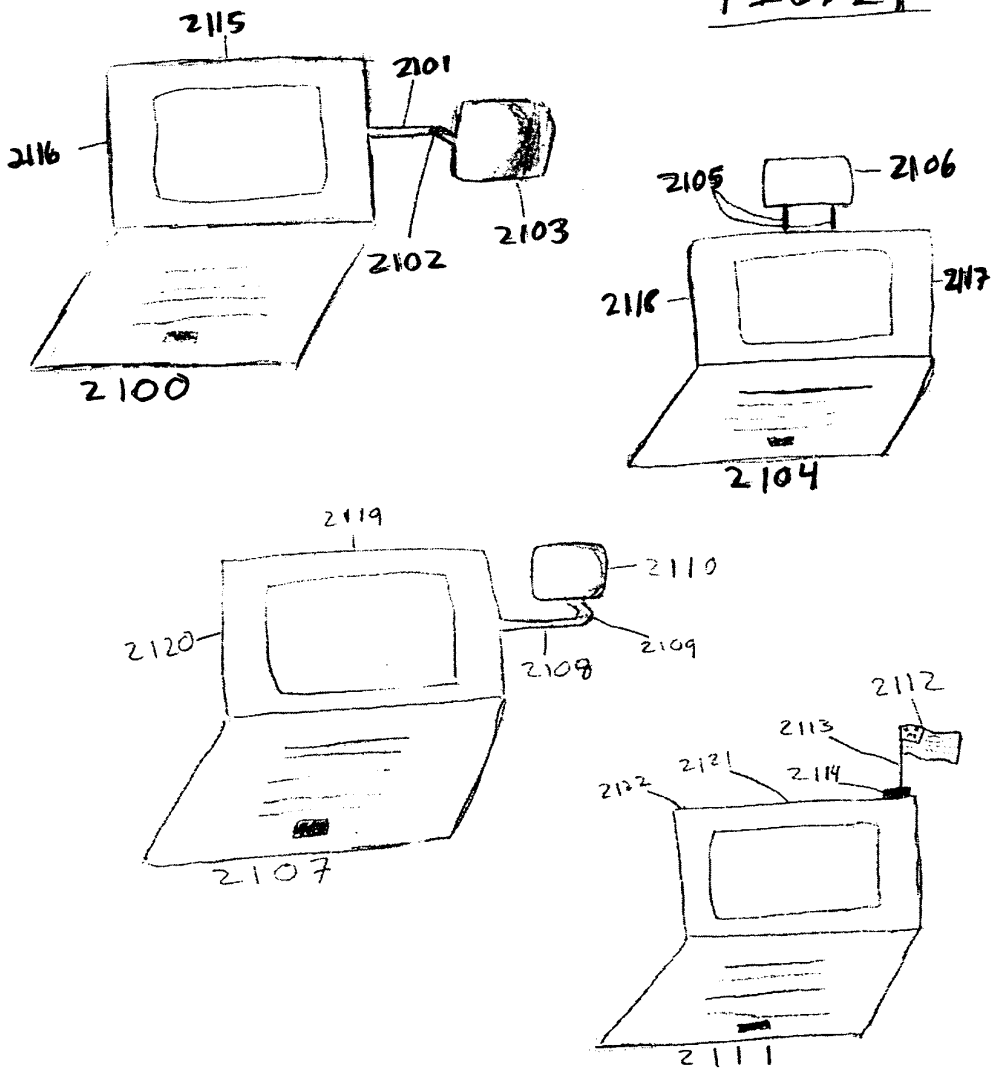

2009
2008
2007
2006
2003
2004
HTTP Server
Mail Server
RSS Source
Console Application
Image Files (gif, jpg, bmp, etc)
Video Files (avi, wmv, qt, etc)
.txt files
2005
Web Application
API
2002
Local Application
API
2001
Plug-in
Plug-in
2011
MDAA
Configuration User Interface
2010
Configuration File
2013
OS Graphics Library
Media Display
Configuration Uploader
2014
Internet Server

FIG. 20

FIG. 21


2115
2101
2116
2103
2102
2100
2105
2106
2118
2117
2104
2119
2110
2120
2109
2108
2107
2112
2113
2121
2114
2122
2111

Electronic Patent Application Fee Transmittal

Application Number:	14344836
Filing Date:	03-Mar-2015
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Filer:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Basic Filing:				
PETITION FEE- 37 CFR 1.17(H) (GROUP III)	1464	1	140	140
RCE- 2ND AND SUBSEQUENT REQUEST	1820	1	1900	1900
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
		Total in USD ($)		**2040**

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Decision Date : April 17, 2020

In re Application of :

Koen Beel

DECISION ON PETITION
UNDER CFR 1.313(c)(2)

Application No : 14344836

Filed : 03-Mar-2015

Attorney Docket No : BEEL3004/BEU/TL

This is an electronic decision on the petition under 37 CFR 1.313(c)(2), filed April 17, 2020 , to withdraw the above-identified application from issue after payment of the issue fee.

The petition is **GRANTED.**

The above-identified application is withdrawn from issue for consideration of a submission under 37 CFR 1.114 (request for continued examination). See 37 CFR 1.313(c)(2).

Petitioner is advised that the issue fee paid in this application cannot be refunded. If, however, this application is again allowed, petitioner may request that it be applied towards the issue fee required by the new Notice of Allowance.

Telephone inquiries concerning this decision should be directed to the Patent Electronic Business Center (EBC) at 866-217-9197.

This application file is being referred to Technology Center AU 2184 for processing of the request for continuing examination under 37 CFR 1.114 .

Office of Petitions

Electronic Acknowledgement Receipt	
EFS ID:	39193680
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee
Filer Authorized By:	
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	17-APR-2020
Filing Date:	03-MAR-2015
Time Stamp:	16:12:16
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$2040
RAM confirmation Number	E20204GG12116695
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Petition automatically granted by EFS	petition-request.pdf	31516 90624987aa4d17ee8d7848e9badd4db16a94a850	no	2
Warnings:					
Information:					
2	Quick Path Information Disclosure Statement	BEEL3004_QPIDS_16APR20.pdf	205857 8286ace9a513a59afb1d2a66c69e827b648e5d42	no	2
Warnings:					
Information:					
3	Request for Continued Examination (RCE)	BEEL3004_RCE_16APR20.pdf	1349954 840994fd95c4dba8ecd70b38ad92b0558351e601	no	3
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Information:					
4	Information Disclosure Statement (IDS) Form (SB08)	BEEL3004_IDS.pdf	1036337 2305c68daaf29336be3ac7cee0db62536595553e	no	8
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Information:					
5	Foreign Reference	WO2010135894.pdf	2730618 88d628e8c28c962f76a571d90cc62ce08f2aa192	no	37
Warnings:					
Information:					
6	Non Patent Literature	BR_Office_Action_8apr20.pdf	220672 40ff283ea8a7b0173304e5cc3b8cd2b0a8939570	no	5
Warnings:					
Information:					

7	Non Patent Literature	BR_OA_8apr20.pdf	220842 87e7e55601da99c6c4d610d07132b5ddfb2907cb	no	5
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Information:					
		Total Files Size (in bytes):	69791969		

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<u>New Applications Under 35 U.S.C. 111</u>
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.
<u>National Stage of an International Application under 35 U.S.C. 371</u>
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.
<u>New International Application Filed with the USPTO as a Receiving Office</u>
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.

Doc Code: PET.AUTO Document Description: Petition automatically granted by EFS-Web	PTO/SB/140 U.S. Patent and Trademark Office Department of Commerce

Electronic Petition Request	**PETITION TO WITHDRAW AN APPLICATION FROM ISSUE AFTER PAYMENT OF THE ISSUE FEE UNDER 37 CFR 1.313(c)**
Application Number	14344836
Filing Date	03-Mar-2015
First Named Inventor	Koen Beel
Art Unit	2184
Examiner Name	CHRISTOPHER BARTELS
Attorney Docket Number	BEEL3004/BEU/TL
Title	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

An application may be withdrawn from issue for further action upon petition by the applicant. To request that the Office withdraw an application from issue, applicant must file a petition under this section including the fee set forth in § 1.17(h) and a showing of good and sufficient reasons why withdrawal of the application from issue is necessary.

APPLICANT HEREBY PETITIONS TO WITHDRAW THIS APPLICATION FROM ISSUE UNDER 37 CFR 1.313(c).

A grantable petition requires the following items:
(1) Petition fee; and
(2) One of the following reasons:
(a) Unpatentability of one or more claims, which must be accompanied by an unequivocal statement that one or more claims are unpatentable, an amendment to such claim or claims, and an explanation as to how the amendment causes such claim or claims to be patentable;
(b) Consideration of a request for continued examination in compliance with § 1.114 (for a utility or plant application only); or
(c) Express abandonment of the application. Such express abandonment may be in favor of a continuing application, but not a CPA under 37 CFR 1.53(d).

Petition Fee

○	Small Entity
○	Micro Entity
◉	Regular Undiscounted

Reason for withdrawal from issue

◯ One or more claims are unpatentable ◉ Consideration of a request for continued examination (RCE) (List of Required Documents and Fees) ◯ Applicant hereby expressly abandons the instant application (any attorney/agent signing for this reason must have power of attorney pursuant to 37 CFR 1.32(b)).
RCE request,submission, and fee. ☐ I certify, in accordance with 37 CFR 1.4(d)(4) that : The RCE request ,submission, and fee have already been filed in the above-identified application on ☒ Are attached.
THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES I certify, in accordance with 37 CFR 1.4(d)(4) that I am: ◯ An attorney or agent registered to practice before the Patent and Trademark Office who has been given power of attorney in this application. ◉ An attorney or agent registered to practice before the Patent and Trademark Office, acting in a representative capacity. ◯ A sole inventor ◯ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ◯ A joint inventor; all of whom are signing this e-petition

Signature	/Thomas Lee/
Name	Thomas Lee
Registration Number	66396

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

REQUEST FOR CONTINUED EXAMINATION(RCE)TRANSMITTAL
(Submitted Only via EFS-Web)

Application Number	14344836	Filing Date	2015-03-03	Docket Number (if applicable)	BEEL3004/BEU/TL	Art Unit	2184
First Named Inventor	Koen Simon Herman BEEL			Examiner Name	Christopher Bartels		

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.
Request for Continued Examination (RCE) practice under 37 CFR 1.114 does not apply to any utility or plant application filed prior to June 8, 1995, or to any design application. The Instruction Sheet for this form is located at WWW.USPTO.GOV

SUBMISSION REQUIRED UNDER 37 CFR 1.114

Note: If the RCE is proper, any previously filed unentered amendments and amendments enclosed with the RCE will be entered in the order in which they were filed unless applicant instructs otherwise. If applicant does not wish to have any previously filed unentered amendment(s) entered, applicant must request non-entry of such amendment(s).

☐ Previously submitted. If a final Office action is outstanding, any amendments filed after the final Office action may be considered as a submission even if this box is not checked.

- ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on _____
- ☐ Other _____

☒ Enclosed

- ☐ Amendment/Reply
- ☒ Information Disclosure Statement (IDS)
- ☐ Affidavit(s)/ Declaration(s)
- ☐ Other _____

MISCELLANEOUS

☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months _____ (Period of suspension shall not exceed 3 months; Fee under 37 CFR 1.17(i) required)

☐ Other _____

FEES

☒ **The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.**
The Director is hereby authorized to charge any underpayment of fees, or credit any overpayments, to Deposit Account No 020200

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED

☒ Patent Practitioner Signature

Applicant Signature

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

Signature of Registered U.S. Patent Practitioner			
Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-04-17
Name	THOMAS LEE	Registration Number	66396

This collection of information is required by 37 CFR 1.114. 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 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.

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

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 Cooperation Treaty.

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

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

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

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

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 NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	04/21/2020	10628336	BEEL3004/BEU/TL	1046

23364 7590 04/01/2020

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

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

The Patent Term Adjustment is 536 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

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

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

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

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

Koen Simon Herman Beel, Eke, BELGIUM;
Yoav Nir, Komen, BELGIUM;
Filip Josephine Johan Louwet, Knesselare, BELGIUM;
Guy Coen, Aalst, BELGIUM;

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.

IR103 (Rev. 10/09)

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

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	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	~~2181~~ 2184
Examiner Name	~~Henry Tsai~~ CHRISTOPHER BARTELS
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

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

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
/C.A.B/	1	20110179182	A1	2011-07-21	VADLA RAVNAS	cited in EP Search Report
/C.A.B/	2	20050015719	A1	2005-01-20	MARCHON et al.	cited in EP Search Report
/C.A.B/	3	20090300520	A1	2009-12-03	Ashutosh	
/C.A.B/	4	20050122392	A1	2005-06-09	Johansen	
/C.A.B/	5	20090092198	A1	~~2011-04-21~~ 04-2009	~~Miyata~~ Motoyoshi et al.	

Changes applied to document, /C.M./ 1/31/2020

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

FOREIGN PATENT DOCUMENTS Remove

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

PART B - FEE(S) TRANSMITTAL

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

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

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

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

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

23364 7590 12/10/2019
BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

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.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	03/10/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
BARTELS, CHRISTOPHER A.	2184	710-010000

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

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

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

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

1 Bacon & Thomas, PLLC
2
3

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

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

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

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

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

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

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

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

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 02-0200

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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

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

Authorized Signature /Thomas Lee/ Date March 10, 2020

Typed or printed name THOMAS LEE Registration No. 66396

Electronic Patent Application Fee Transmittal

Application Number:	14344836
Filing Date:	03-Mar-2015
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Filer:	Thomas Lee/Shelly Darrenkamp
Attorney Docket Number:	BEEL3004/BEU/TL

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

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	1000	1000

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Extension-of-Time:				
Miscellaneous:				
			Total in USD ($)	**1000**

Electronic Acknowledgement Receipt	
EFS ID:	38816983
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	10-MAR-2020
Filing Date:	03-MAR-2015
Time Stamp:	13:01:27
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$1000
RAM confirmation Number	E202030D02513730
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	BEEL3004_if.pdf	87113 28ddb7c879a5c3285e97e97e9e6f3991ecf4abbf	no	1
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30455 f2abd6604af8e591b3976a6950afdb97e7eefb05	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	117568		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

UNITED STATES PATENT AND TRADEMARK OFFICE

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

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

23364 7590 02/03/2020

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

EXAMINER	
BARTELS, CHRISTOPHER A.	

ART UNIT	PAPER NUMBER
2184	

NOTIFICATION DATE	DELIVERY MODE
02/03/2020	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):

MAIL@BACONTHOMAS.COM

Supplemental ***Notice of Allowability***	**Application No.** 14/344,836	**Applicant(s)** Beel et al.	
	Examiner CHRISTOPHER A BARTELS	**Art Unit** 2184	**AIA (FITF) Status** No

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

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

1. ☑ This communication is responsive to 01/14/2020.
   ☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

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

3. ☑ The allowed claim(s) is/are 82-104 . 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 12/23/2019, 01/03/2020.
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 _____.

/C.A.B/ Examiner, Art Unit 2184	/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

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

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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
/C.A.B/	1	20120054372		2012-03-01	Chen et al.	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Office Action in related U.S. app. 14/725,401 dated December 31, 2019.	

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	01/28/2020

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-01-03
Name/Print	THOMAS LEE	Registration Number	66396

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

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First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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/C.A.B./	2	20100332663	A1	2010-12-30	CHANG	
/C.A.B./	3	20090235170	A1	2009-09-17	GOLDEN et al.	

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/C.A.B./	1	2008/271265	JP	A	2008-11-06	MATSUSHITA ELECTRIC IND CO LTD	English abstract and translation	X

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/C.A.B./	2	2107463	EP	A2	2009-10-07	OPTION		☐
/C.A.B./	3	2756668	EP	A0	2014-07-23	BARCO NV	corresponds to WO 2013/037979	☐

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/C.A.B./	1	Chinese Office Action dated September 26, 2017, for CN 201280055744.2, and English translation thereof.	☒
/C.A.B./	2	U.S. Office Action dated September 28, 2017, for U.S. Application No. 14/344,830	☐
/C.A.B./	3	U.S. Office Action dated September 28, 2017, for U.S. Application No. 14/278,442.	☐
/C.A.B./	4	"Quick Connect Wireless with Epson Projectors", retrieved from https://www.youtube.com/watch?v=9POz4-HyDXY, November 3, 2009.	☐
/C.A.B./	5	"Remote Framebuffer Protocol (RFB)", Internet standard IETF RFC 6143 , March 2011	☐
/C.A.B./	6	Richardson & Wood, "The RFB Protocol", Cambridge: ORL, 1998.	☐
/C.A.B./	7	"Manual of the Epson projectors", retrieved from http://esupport.epsoneurope.com/ViewArticle.aspx?lng=sv-SE&kbid=328038&data=bOU002FRIftu7YFtMOBp2mpSKntPq1A26Wyw&cl=1, February 14, 2011.	☐

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EXAMINER SIGNATURE			
Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2017-10-16
Name/Print	THOMAS LEE	Registration Number	66396

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

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/C.A.B/	1	Summons to attend oral proceedings in corresponding EP 12762258.7 dated December 12, 2019.	

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Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
	1	20120054372		2012-03-01	Chen et al.	

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

	1	Office Action in related U.S. app. 14/725,401 dated December 31, 2019.	

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

X 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.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2020-01-03
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

Electronic Patent Application Fee Transmittal

Application Number:	14344836
Filing Date:	03-Mar-2015
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Filer:	Thomas Lee/Shelly Darrenkamp
Attorney Docket Number:	BEEL3004/BEU/TL

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

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

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt	
EFS ID:	38192237
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	03-JAN-2020
Filing Date:	03-MAR-2015
Time Stamp:	09:35:46
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$240
RAM confirmation Number	E202013036119576
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	BEEL3004_IDS.pdf	1035025 08407233b80d7688820b1e71b05d03695dd28f75	no	4
Warnings:					
Information:					
2	Non Patent Literature	BEEL3002CIPC_NFOA_31DEC19.pdf	914711 27d53f8f9521dde0675e8c53a11d82b680d61721	no	24
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30461 72a0bcc94f3d352d0a543bbe52063db2ac857525	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	1980197		

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

New Applications Under 35 U.S.C. 111

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

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

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

New International Application Filed with the USPTO as a Receiving Office

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

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

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U.S.PATENT APPLICATION PUBLICATIONS Remove

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

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FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

	1	Summons to attend oral proceedings in corresponding EP 12762258.7 dated December 12, 2019.	

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

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See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-12-23
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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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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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:	14344836
Filing Date:	03-Mar-2015
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Filer:	Thomas Lee/Shelly Darrenkamp
Attorney Docket Number:	BEEL3004/BEU/TL

Filed as Large Entity

Filing Fees for U.S. National Stage under 35 USC 371

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

Description	Fee Code	Quantity	Amount	Sub-Total in USD($)
Miscellaneous:				
SUBMISSION- INFORMATION DISCLOSURE STMT	1806	1	240	240
		Total in USD ($)		**240**

Electronic Acknowledgement Receipt	
EFS ID:	38116649
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	23-DEC-2019
Filing Date:	03-MAR-2015
Time Stamp:	10:45:48
Application Type:	U.S. National Stage under 35 USC 371

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	$240
RAM confirmation Number	E2019BMA46110951
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	BEEL3004_IDS.pdf	1035007 fd53dca93d452c508dd5a3d9f36260a3e3e8cf78	no	4
Warnings:					
Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Non Patent Literature	BAR1427EP_SummonsOralProceedings_12Dec2019.pdf	1343006 52851d85a20938118aada16434740b4458d5ab91	no	29
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30460 9089c6d1add9aeb14e317fabb7346a6da68ffd9f	no	2
Warnings:					
Information:					
		Total Files Size (in bytes):	2408473		

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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.

UNITED STATES PATENT AND TRADEMARK OFFICE

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

NOTICE OF ALLOWANCE AND FEE(S) DUE

23364 7590 12/10/2019

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

EXAMINER
BARTELS, CHRISTOPHER A.

ART UNIT	PAPER NUMBER
2184	

DATE MAILED: 12/10/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	03/10/2020

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

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

HOW TO REPLY TO THIS NOTICE:

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

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

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

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

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

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

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

PART B - FEE(S) TRANSMITTAL

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

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

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

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

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

23364 7590 12/10/2019

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

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.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

TITLE OF INVENTION: ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	$1000	$0.00	$0.00	$1000	03/10/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
BARTELS, CHRISTOPHER A.	2184	710-010000

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

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

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

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

1_____

2_____

3_____

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

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

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

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

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

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

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

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

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

❑ Applicant certifying micro entity status. See 37 CFR 1.29

❑ Applicant asserting small entity status. See 37 CFR 1.27

❑ Applicant changing to regular undiscounted fee status.

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

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

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____

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 NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

23364 7590 12/10/2019

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

EXAMINER	
BARTELS, CHRISTOPHER A.	
ART UNIT	**PAPER NUMBER**
2184	

DATE MAILED: 12/10/2019

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

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

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

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

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

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

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

Privacy Act Statement

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

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

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

Notice of Allowability	**Application No.** 14/344,836	**Applicant(s)** Beel et al.	
	Examiner CHRISTOPHER A BARTELS	**Art Unit** 2184	**AIA (FITF) Status** No

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

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

1. ☑ This communication is responsive to 10/07/2019.
   ☐ 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 82-104 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see **http://www.uspto.gov/patents/init_events/pph/index.jsp** or send an inquiry to **PPHfeedback@uspto.gov.**

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

   Certified copies:

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

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

   * Certified copies not received: _____ .

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

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

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

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

Attachment(s)

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

/C.A.B/ Examiner, Art Unit 2184	/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184

Continuation of Attachment(s) 2. Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date: 09/11/2019, 10/02/2019, 10/17/2019, and 10/21/2019; Other IDS dates: 10/16/17, 11/21/17, 03/14/18, 03/29/18, 04/24/18, 02/12/19, 02/21/19

DETAILED ACTION

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.

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 09/11/2019, 10/02/2019, 10/17/2019, and 10/21/2019. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Reasons for allowance

2. The following is an examiner's statement of reasons for allowance:

Respective claims 82 and 92 has been amended inserting the term "generic" as indicated by the Examiner in the previous office action. Therefore, the outstanding ground of rejection(s), in particular the 112 rejection as mentioned in the previous office action has been withdrawn. Thus for these reasons, claims 82-104 are allowed.

Conclusion

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER A. BARTELS whose telephone number is (571)270-3182. The examiner can normally be reached on Monday-Friday 9:00a-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on 571-272-

4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/C.A.B./
Examiner
Art Unit 2184

/HENRY TSAI/
Supervisory Patent Examiner, Art Unit 2184

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner
(G06F13/102, G06F3/16, G06F9/44505, H04L12/1813, H04L65/(4023 AND 4038) text search in East	11/26/2018, 11/2019	C.A.B.
H04M3/567 text search in East	11/26/2018, 11/2019	C.A.B.

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
inventor search performed in East (USPAT USOCR USPGPUB)	04/03/2017, 10/16/ 2017	C.A.B.
Text search performed in East (ALL DATABASES)	04/03/2017, 10/16/ 2017, 02/2018, 11/ 2018, 06/23/2019, 11/ 2019	C.A.B.

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	interference search performed in East (see handout)	11/26/2018, 11/2019	C.A.B.

	/C.B./ Examiner.Art Unit 2184

Search Notes	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

	/C.B./ Examiner.Art Unit 2184

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	**Art Unit**
	CHRISTOPHER A BARTELS	2184

CPC							
Symbol						**Type**	**Version**
G06F	/	13	/	102		F	2013-01-01
H04M	/	3	/	567		I	2013-01-01
H04L	/	12	/	1813		I	2013-01-01
H04L	/	65	/	4038		I	2013-01-01
H04L	/	65	/	4023		I	2013-01-01
G06F	/	3	/	16		I	2013-01-01
G06F	/	9	/	44505		I	2013-01-01

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

/CHRISTOPHER A BARTELS/ Examiner, Art Unit 2184		**Total Claims Allowed:**	
(Assistant Examiner)	(Date)	23	
/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184	12 November 2019	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	1

U.S. Patent and Trademark Office — Part of Paper No.: 20191112

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

INTERNATIONAL CLASSIFICATION				
CLAIMED				
G06F	/	13	/	10
H04L	/	12	/	18
H04L	/	29	/	06
H04L	/	29	/	06
G06F	/	3	/	16
G06F	/	9	/	445
H04M	/	3	/	56

NON-CLAIMED				
	/		/	

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

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

/CHRISTOPHER A BARTELS/ Examiner, Art Unit 2184 (Assistant Examiner)	(Date)	Total Claims Allowed: 23	
/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184 (Primary Examiner)	12 November 2019 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office — Part of Paper No.: 20191112

Issue Classification	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	**Art Unit**
	CHRISTOPHER A BARTELS	2184

☐ 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	82	10	91	19	100										
2	83	11	92	20	101										
3	84	12	93	21	102										
4	85	13	94	22	103										
5	86	14	95	23	104										
6	87	15	96												
7	88	16	97												
8	89	17	98												
9	90	18	99												

/CHRISTOPHER A BARTELS/ Examiner, Art Unit 2184 (Assistant Examiner)	(Date)	**Total Claims Allowed:** 23	
/HENRY TSAI/ Supervisory Patent Examiner, Art Unit 2184 (Primary Examiner)	12 November 2019 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

U.S. Patent and Trademark Office Part of Paper No.: 20191112

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

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

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

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

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

FOREIGN PATENT DOCUMENTS Remove

Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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

NON-PATENT LITERATURE DOCUMENTS Remove

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Chinese Office Action in corresponding Chinese Application No. 201280074077.2, dated September 30, 2019.	X

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

EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/12/2019

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

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

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-10-21
Name/Print	THOMAS LEE	Registration Number	66396

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	~~Scott C. Sun~~ CHRISTOPHER A. BARTELS
Attorney Docket Number	BEEL3004/BEU/TL

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Art Unit	2181
Examiner Name	Scott C. Sun
Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Chinese Office Action in related Chinese Application No. 201280001542.X, dated January 2, 2019.	X

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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

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SIGNATURE

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-02-12
Name/Print	THOMAS LEE	Registration Number	66396

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

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(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Request for Reexamination of Patent No. 8,756,348, dated February 9, 2018.	
/C.A.B/	2	Request for Reexamination of Patent No. 9,083,769, dated February 9, 2018.	

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2018-03-14
Name/Print	THOMAS LEE	Registration Number	66396

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/C.A.B/	1	Office Action in related U.S. Application Number 15/449,048, dated February 16, 2018.	

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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 record s.

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

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

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

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

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

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

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

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

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

PTO/SB/08a (03-15)
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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

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Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Notice on Reexamination in corresponding Chinese Application No. 201280001542.X, dated June 11, 2019.	X

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EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/12/2019

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

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

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	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-09-11
Name/Print	THOMAS LEE	Registration Number	66396

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

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L2	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L3	3	L2 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L4	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L5	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:18
L6	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L7	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L8	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L9	2	"20020174254"	US-PGPUB; USPAT;	OR	ON	2019/11/12 10:18

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L10	1	(L6 L7 L8 L9) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L11	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:18
L12	103	L11 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L13	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L14	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:18
L15	14	L11 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:18
L16	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:18
L17	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:18
L18	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L19	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L20	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L21	282	(audio near2 driver audio adj driver) and (hmi human near2	US-PGPUB; USPAT;	OR	ON	2019/11/12 10:19

		(machine interface)) and (usb with (mass storage class))	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L22	3	L21 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L23	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L24	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L25	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L26	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L27	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L28	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L29	1	(L25 L26 L27 L28) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L30	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L31	103	L30 and (portable cellular pda smartphone smart adj phone	US-PGPUB; USPAT;	OR	ON	2019/11/12 10:19

		mobile)	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L32	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L33	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L34	14	L30 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L35	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L36	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L37	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L38	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L39	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L40	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L41	3	L40 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L42	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L43	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT;	AND	ON	2019/11/12 10:19

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L44	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L45	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L46	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L47	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L48	1	(L44 L45 L46 L47) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L49	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L50	103	L49 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L51	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L52	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L53	14	L49 and usb	US-PGPUB; USPAT;	AND	ON	2019/11/12 10:19

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L54	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L55	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L56	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L57	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L58	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L59	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L60	3	L59 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L61	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L62	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L63	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L64	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L65	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT;	OR	ON	2019/11/12 10:19

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L66	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L67	1	(L63 L64 L65 L66) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L68	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L69	103	L68 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L70	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L71	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L72	14	L68 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L73	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L74	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L75	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L76	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L77	3	"14344836"	US-PGPUB; USPAT;	OR	ON	2019/11/12 10:19

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
L78	3	(US-20070033289-$ or US-20130060662-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:19
L79	1	L78 and (driver)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L80	1360	(audio speaker) with (driver module) and (driver module) with (generic and specific)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L81	759	L80 and (adhoc ad adj hoc network$3 lan vpn wan) and (port peripheral)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L82	637	L81 and (window microsoft operat$3 near2 system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L83	662	L81 and (window microsoft operat$3 near2 system kernel linux unix mac os adj x)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L84	25	L83 not L82	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L85	7	"20070033289"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L86	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L87	7	(US-20070033289-$ or US-20130060662-$ or US-20040125777-$ or US-20070065078-$ or US-20090247006-$ or US-	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19

		20130054348-$).did. or (US-8346753-$).did.				
L88	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L89	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L90	3	L89 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L91	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L92	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L93	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L94	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L95	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L96	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L97	1	(L93 L94 L95 L96) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/12 10:19

			DERWENT; IBM_TDB			
L98	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L99	103	L98 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L100	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L101	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L102	14	L98 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L103	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L104	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L105	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L106	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L107	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L108	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L109	3	L108 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/12 10:19

			DERWENT; IBM_TDB			
L110	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L111	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L112	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L113	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L114	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L115	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L116	1	(L112 L113 L114 L115) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L117	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L118	103	L117 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L119	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/12 10:19

			DERWENT; IBM_TDB			
L120	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L121	14	L117 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L122	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L123	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L124	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L125	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L126	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L127	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L128	3	L127 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L129	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L130	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L131	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/12 10:19

			DERWENT; IBM_TDB			
L132	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L133	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L134	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L135	1	(L131 L132 L133 L134) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L136	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L137	103	L136 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L138	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L139	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L140	14	L136 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L141	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L142	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB;	OR	ON	2019/11/12

			USPAT; USOCR			10:19
L143	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L144	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L145	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L146	282	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L147	3	L146 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L148	16592	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L149	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L150	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L151	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L152	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L153	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2019/11/12 10:19

			DERWENT; IBM_TDB			
L154	1	(L150 L151 L152 L153) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L155	124	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L156	103	L155 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L157	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L158	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L159	14	L155 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2019/11/12 10:19
L160	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L161	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L162	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L163	20	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2019/11/12 10:19
L164	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L165	3	(US-20070033289-$ or US-20130060662-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	OFF	2019/11/12 10:19

L166	1	L165 and (driver)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L167	1360	(audio speaker) with (driver module) and (driver module) with (generic and specific)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L168	759	L167 and (adhoc ad adj hoc network$3 lan vpn wan) and (port peripheral)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L169	637	L168 and (window microsoft operat$3 near2 system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L170	662	L168 and (window microsoft operat$3 near2 system kernel linux unix mac os adj x)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L171	25	L170 not L169	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L172	7	"20070033289"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2019/11/12 10:19
L173	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L174	7	(US-20070033289-$ or US-20130060662-$ or US-20040125777-$ or US-20070065078-$ or US-20090247006-$ or US-20130054348-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L175	3	"20110180380"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19

L176	7	"20100064063"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L177	29	"8756348"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L178	3	"8756348".PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L179	48	"0189156" "2010105335" "20100302454"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L180	32	"0189156"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L181	17	("2010105335" "20100302454")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L182	8	("2010105335" "20100302454").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L183	0	"14725401".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L184	2	"20150263905"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L185	6	("20090064302" "20100066806").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19

L186	30	("20100064063" "2013037979" "2008165007" "2000242257")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L187	492	"l8" and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L188	364447	(driver software process method) with (generic install$5 pre adj install$5 windows linux osx apple operat$3 near2 system).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L189	28974	L188 and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L190	75	L189 and (mass adj storage with (driver function$5) screen near2 scrap$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L191	12	L189 and (mass adj storage with (driver function$5) and screen near2 scrap$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L198	15	"20110188391" "20110092198"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
L199	5	("20110188391" "20110092198").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/11/12 10:19
S1	2	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/03/10 20:50
S2	204	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:30

S3	1	S2 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:30
S4	12070	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:33
S5	95	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/04/03 08:34
S7	13	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:43
S8	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:43
S9	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:47
S10	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 08:57
S11	1	(S7 S8 S9 S10) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 09:05
S12	95	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/04/03 10:57
S13	77	S12 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 10:57

S14	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 10:59
S15	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/04/03 10:59
S16	8	S12 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/04/03 11:03
S17	10	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/04/03 13:24
S18	11	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/04/03 13:24
S19	10	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/04/03 13:24
S20	15	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/04/03 13:24
S21	3	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S22	224	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S23	1	S22 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S24	12761	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S25	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/13 22:55

S26	13	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S27	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S28	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S29	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S30	1	(S26 S27 S28 S29) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S31	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/13 22:55
S32	79	S31 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S33	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S34	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/13 22:55
S35	8	S31 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/13 22:55

S36	11	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/13 22:55
S37	12	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/13 22:55
S38	11	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/13 22:55
S39	16	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/13 22:55
S40	3	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S41	224	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S42	1	S41 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S43	12797	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S44	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06
S45	13	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S46	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S47	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06

S48	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S49	1	(S45 S46 S47 S48) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S50	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06
S51	79	S50 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S52	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S53	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S54	8	S50 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06
S55	11	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S56	12	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S57	11	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S58	16	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S59	3	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06

S60	224	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S61	1	S60 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S62	12797	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S63	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06
S64	13	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S65	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S66	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S67	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S68	1	(S64 S65 S66 S67) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S69	98	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06

S70	79	S69 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S71	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S72	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2017/10/16 14:06
S73	8	S69 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2017/10/16 14:06
S74	11	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S75	12	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S76	11	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S77	16	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2017/10/16 14:06
S78	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/01/16 08:58
S79	3	(US-20070033289-$ or US-20130060662-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	OFF	2018/02/16 19:47
S80	1	S79 and (driver)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/16 19:47
S81	1096	(audio speaker) with (driver module) and (driver module) with (generic and specific)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/16 19:49
S82	636	S81 and (adhoc ad adj hoc network$3 lan vpn wan) and (port peripheral)	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2018/02/16 19:50

			EPO; JPO; DERWENT; IBM_TDB			
S83	522	S82 and (window microsoft operat$3 near2 system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/16 19:50
S84	544	S82 and (window microsoft operat$3 near2 system kernel linux unix mac os adj x)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/16 19:51
S85	22	S84 not S83	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/16 19:51
S86	6	"20070033289"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/02/20 11:18
S87	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/07/18 08:52
S88	7	(US-20070033289-$ or US-20130060662-$ or US-20040125777-$ or US-20070065078-$ or US-20090247006-$ or US-20130054348-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	ON	2018/07/23 15:17
S89	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S90	255	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S91	2	S90 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S92	14620	(web data screen) near2 scrap$4	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S93	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S94	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S95	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S96	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S97	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S98	1	(S94 S95 S96 S97) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S99	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S100	92	S99 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S101	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S102	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S103	12	S99 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S104	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S105	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S106	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S107	19	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S108	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S109	255	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S110	2	S109 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S111	14620	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S112	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S113	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S114	3	"20070137415"	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S115	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S116	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S117	1	(S113 S114 S115 S116) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S118	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S119	92	S118 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S120	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S121	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S122	12	S118 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S123	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S124	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S125	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR			
S126	19	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S127	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S128	255	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S129	2	S128 and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S130	14620	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S131	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S132	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S133	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S134	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S135	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S136	1	(S132 S133 S134 S135) and screen near2 scrap$4	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S137	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S138	92	S137 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S139	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S140	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S141	12	S137 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S142	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S143	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S144	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S145	19	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S146	5	"20150169477"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S147	255	(audio near2 driver audio adj driver) and (hmi human near2 (machine interface)) and (usb with (mass storage class))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S148	2	S147 and screen near2 scrap$4	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S149	14620	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S150	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S151	15	"2007137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S152	3	"20070137415"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S153	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S154	2	"20020174254"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S155	1	(S151 S152 S153 S154) and screen near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S156	111	(web data screen) near2 scrap$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S157	92	S156 and (portable cellular pda smartphone smart adj phone mobile)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S158	2	"20020174254"	US-PGPUB; USPAT;	OR	ON	2018/11/26 07:58

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S159	9	("20110023096" "20070033289" "20140082227").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S160	12	S156 and usb	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	AND	ON	2018/11/26 07:58
S161	14	(("BEEL") near3 ("Koen")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S162	15	(("NIR") near3 ("Yoav")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S163	14	(("LOUWET") near3 ("Filip")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S164	19	(("COEN") near3 ("Guy")).INV.	US-PGPUB; USPAT; USOCR	OR	ON	2018/11/26 07:58
S165	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S166	3	(US-20070033289-$ or US-20130060662-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	OFF	2018/11/26 07:58
S167	1	S166 and (driver)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S168	1203	(audio speaker) with (driver module) and (driver module) with (generic and specific)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S169	683	S168 and (adhoc ad adj hoc network$3 lan vpn wan) and (port peripheral)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S170	566	S169 and (window microsoft operat$3 near2 system)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	OR	OFF	2018/11/26 07:58

			IBM_TDB			
S171	588	S169 and (window microsoft operat$3 near2 system kernel linux unix mac os adj x)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S172	22	S171 not S170	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S173	6	"20070033289"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2018/11/26 07:58
S174	3	"14344836"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 07:58
S175	7	(US-20070033289-$ or US-20130060662-$ or US-20040125777-$ or US-20070065078-$ or US-20090247006-$ or US-20130054348-$).did. or (US-8346753-$).did.	US-PGPUB; USPAT	OR	ON	2018/11/26 07:58
S176	3	"20110180380"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 08:01
S177	7	"20100064063"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 08:06
S178	20	"8756348"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 08:16
S179	2	"8756348".PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 08:16
S180	34	"0189156" "2010105335" "20100302454"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2018/11/26 08:21

			DERWENT; IBM_TDB			
S181	18	"0189156"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 08:21
S182	17	("2010105335" "20100302454")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 09:48
S183	8	("2010105335" "20100302454").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 09:48
S184	0	"14725401".pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 11:21
S185	2	"20150263905"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 11:21
S186	6	("20090064302" "20100066806").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 11:22
S187	30	("20100064063" "2013037979" "2008165007" "2000242257")	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 11:39
S189	440	"l8" and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 12:29
S190	27066	S188 and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 12:30
S191	74	S190 and (mass adj storage with (driver function$5) screen near2 scrap$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	OR	ON	2018/11/26 12:38

			DERWENT; IBM_TDB			
S192	12	S190 and (mass adj storage with (driver function$5) and screen near2 scrap$4).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2018/11/26 12:38
S199	14	"20110188391" "20110092198"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/23 13:15
S200	5	("20110188391" "20110092198").pn.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2019/06/23 13:15

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L192	364447	(driver software process method) with (generic install$5 pre adj install$5 windows linux osx apple operat$3 near2 system).clm.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L193	184345	(G06F$ H04L$ H04M$).CPC. and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L194	19077	L193 AND (driver software process method) with (generic install$5 pre adj install$5 windows linux osx apple operat$3 near2 system).clm.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L195	12	L194 and (mass adj storage with (driver function$5) and screen near2 scrap$4).clm.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L196	72	L194 and (mass adj storage with (driver function$5) screen near2 scrap$4).clm.	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
L197	60	L196 NOT L195	US-PGPUB; USPAT	OR	ON	2019/11/12 10:19
S193	337912	(driver software process method) with (generic install$5 pre adj install$5 windows linux osx apple operat$3 near2 system).clm.	US-PGPUB; USPAT	OR	ON	2018/11/26 12:27
S194	173044	(G06F$ H04L$ H04M$).CPC. and (peripheral endpoint module speaker webcam web adj camera webcamera multimedia multi adj media) with (bus interface network select$5 switch$3).clm.	US-PGPUB; USPAT	OR	ON	2018/11/26 12:41
S195	17887	S194 AND (driver software process method) with (generic install$5 pre adj install$5 windows linux osx apple operat$3	US-PGPUB; USPAT	OR	ON	2018/11/26 12:42

		near2 system).clm.				
S196	12	S195 and (mass adj storage with (driver function$5) and screen near2 scrap$4).clm.	US-PGPUB; USPAT	OR	ON	2018/11/26 12:43
S197	71	S195 and (mass adj storage with (driver function$5) screen near2 scrap$4).clm.	US-PGPUB; USPAT	OR	ON	2018/11/26 12:43
S198	59	S197 NOT S196	US-PGPUB; USPAT	OR	ON	2018/11/26 12:44

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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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/C.A.B/	1	20100302454	A1	2010-12-02	EPSTEIN et al.	cited in EP Notice

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Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Chinese Office Action dated October 31, 2017, for CN 201280001542.X, and English translation thereof.	X
	2	European Notice of Opposition dated September 27, 2017 for EP 2756668.	☐
	3	StarTech.com: USB to DVI External Dual Monitor Video Adapter/USS to VGA External Dual Monitor Video Adapter, User Manual dated May 19, 2011.	☐
	4	Microsoft Community, conversation on August 30, 2011 about USB2VGA Adapter, retrieved on September 7, 2017.	☐
	5	Webopedia Definition of Peripheral Device, retrieved on September 7, 2017.	☐
	6	Trulink Wireless USB2VGA Adapter, Quick Start Guide, retrieved from www.c2g.com.	☐
/C.A.B/	7	HWebPage on Availability of Trulink, retrieved on September 7, 2017.	☐

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99**)	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

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

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See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2017-11-21
Name/Print	THOMAS LEE	Registration Number	66396

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

PTO/SB/08a (03-15)
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Art Unit	2181
Examiner Name	~~Scott C. Sun~~ CHRISTOPHER A. BARTELS
Attorney Docket Number	BEEL3004/BEU/TL

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First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Scott C. Sun
Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Chinese Office Action in related Chinese Application No. 201280001542.X, dated January 2, 2019.	X

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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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.

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /C.A.B/

INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Scott C. Sun
Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

X 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.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-02-12
Name/Print	THOMAS LEE	Registration Number	66396

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

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

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Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Chinese Office Action in related Chinese Application Number 201280055744.2, dated March 30, 2018.	X

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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	Filing Date	2015-03-03
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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2018-04-24
Name/Print	THOMAS LEE	Registration Number	66396

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	~~2184~~ 2184
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
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	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	Non-Final Office Action in corresponding U.S. Reexamination No. 90/014,088, dated September 25, 2018.	
/C.A.B/	2	Final Office Action in corresponding U.S. Reexamination No. 90/014,087, dated January 22, 2019.	

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EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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/C.A.B./	1	20110078716	A1	2011-03-31	MACWAN	
/C.A.B./	2	20100332663	A1	2010-12-30	CHANG	
/C.A.B./	3	20090235170	A1	2009-09-17	GOLDEN et al.	

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/C.A.B./	1	2008/271265	JP	A	2008-11-06	MATSUSHITA ELECTRIC IND CO LTD	English abstract and translation	X

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/C.A.B./	2	2107463	EP	A2	2009-10-07	OPTION		☐
/C.A.B./	3	2756668	EP	A0	2014-07-23	BARCO NV	corresponds to WO 2013/037979	☐

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/C.A.B./	1	Chinese Office Action dated September 26, 2017, for CN 201280055744.2, and English translation thereof.	☒
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/C.A.B./	3	U.S. Office Action dated September 28, 2017, for U.S. Application No. 14/278,442.	☐
/C.A.B./	4	"Quick Connect Wireless with Epson Projectors", retrieved from https://www.youtube.com/watch?v=9POz4-HyDXY, November 3, 2009.	☐
/C.A.B./	5	"Remote Framebuffer Protocol (RFB)", Internet standard IETF RFC 6143 , March 2011	☐
/C.A.B./	6	Richardson & Wood, "The RFB Protocol", Cambridge: ORL, 1998.	☐
/C.A.B./	7	"Manual of the Epson projectors", retrieved from http://esupport.epsoneurope.com/ViewArticle.aspx?lng=sv-SE&kbid=328038&data=bOU002FRIftu7YFtMOBp2mpSKntPq1A26Wyw&cl=1, February 14, 2011.	☐

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2184
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

EXAMINER SIGNATURE			
Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/27/2019

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

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

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2017-10-16
Name/Print	THOMAS LEE	Registration Number	66396

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

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Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
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	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	U.S. Office Action in corresponding U.S. Application No. 16/034,846, dated October 7, 2019.	

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Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/12/2019

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-10-17
Name/Print	THOMAS LEE	Registration Number	66396

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

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Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2184
Examiner Name	Christopher A. Bartels
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	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	U.S. Office Action in corresponding U.S. Application No. 14/278,442, dated September 18, 2019.	

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EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	11/12/2019

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-10-02
Name/Print	THOMAS LEE	Registration Number	66396

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

Examiner Initial*	Cite No	Patent Number	Kind Code[1]	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
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NON-PATENT LITERATURE DOCUMENTS Remove

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

	1	Chinese Office Action in corresponding Chinese Application No. 201280074077.2, dated September 30, 2019.	X

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EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-10-21
Name/Print	THOMAS LEE	Registration Number	66396

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Electronic Acknowledgement Receipt

EFS ID:	37506969
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	21-OCT-2019
Filing Date:	03-MAR-2015
Time Stamp:	10:46:27
Application Type:	U.S. National Stage under 35 USC 371

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)	BEEL3004_IDS.pdf	1035009 87a1496f01b33600a5ca9a7fea740d9eeaedbae9	no	4

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Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
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	Attorney Docket Number	BEEL3004/BEU/TL

	1	U.S. Office Action in corresponding U.S. Application No. 16/034,846, dated October 7, 2019.	

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Name/Print	THOMAS LEE	Registration Number	66396

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Electronic Acknowledgement Receipt

EFS ID:	37482971
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	17-OCT-2019
Filing Date:	03-MAR-2015
Time Stamp:	14:27:34
Application Type:	U.S. National Stage under 35 USC 371

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)	BEEL3004_IDS.pdf	1035002 97f687f38e1c3bb9843a7230e54256519bc36080	no	4

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2	Non Patent Literature	BEEL3003C_OA_7OCT19.pdf	3937662 8d920ea0033fd144ba4f1c7fce93c0d1b9a08db8	no	79
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			Total Files Size (in bytes):	4972664	

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PTO/SB/06 (09-11)
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875	Application or Docket Number 14/344,836	Filing Date 03/03/2015	☐ To be Mailed

ENTITY: ☑ LARGE ☐ SMALL ☐ MICRO

APPLICATION AS FILED - PART I

	(Column 1)	(Column 2)			
FOR	NUMBER FILED	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 $80 =	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		x $420 =	
☐ 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	10/07/2019	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE ($)	ADDITIONAL FEE ($)
	Total (37 CFR 1.16(i))	* 23	Minus	** 20	= 3		x $100 =	300
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0		x $460 =	0
	☐ Application Size Fee (37 CFR 1.16(s))							
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							
							TOTAL ADD'L FEE	300

		(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.	LIE
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".	/MYRTLE B LEIGH/
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Application No.:	14/344,836	**Confirm. No.:**	1046
Filing Date:	March 3, 2015	**Art Unit:**	2184
First Inventor:	Koen Simon Herman BEEL	**Customer No.:**	23364
Attorney No.:	BEEL3004/BEU/TL	**Examiner:**	Christopher A. Bartels
For:	**ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS**		

REPLY UNDER 37 C.F.R. § 1.111 TO OFFICE ACTION DATED JULY 5, 2019

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

Sir:

INTRODUCTORY COMMENTS

This is in reply to the Office Action dated July 5, 2019 in the above identified application.

In view of the following amendments and remarks, reconsideration of the application is respectfully requested.

AMENDMENT

Please amend the pending application in accordance with the following particulars.

In the Claims

The claims are amended as shown on the following pages under the heading LIST OF CURRENT CLAIMS. The list shows the status of all claims presently in the application and is intended to supersede all prior versions of the claims in the application. Any cancellation of claims is made without prejudice or disclaimer.

LIST OF CURRENT CLAIMS

1-81. (Cancelled)

82. (Currently Amended) A method for connecting a processing device to a communications network, the processing device having a memory, a display and an operating system with pre-installed generic drivers providing a communications protocol for communication between the processing device and a class of peripheral devices, the method comprising:

a) coupling an external peripheral device physically to a port of the processing device,

wherein the peripheral device comprises a wireless transceiver and a connector, said connector configured to couple to the port of the processing device;

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

c) using the peripheral device to connect the processing device to a communications network via the wireless transceiver;

d) routing audio data from the processing device to the wireless transceiver via the connector of the peripheral device and the means for audio communication and routing the audio data from the wireless transceiver of the peripheral device to a base node over the communications network, wherein the first pre-installed generic audio driver is used for transferring the audio data between the processing device and the peripheral device.

83. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a human interface device and wherein

the pre-installed generic driver is a human interface device driver.

84. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a mass storage device and wherein the pre-installed generic driver is a mass storage device driver.

85. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a composite device and wherein pre-installed generic drivers drive different device interfaces independently.

86. (Previously Presented) The method of claim 82, wherein a client application is stored on the peripheral device which when run on the processing device obtains screen scraped data.

87. (Previously Presented) The method of claim 86 wherein the client application is a portable application.

88. (Previously Presented) The method of claim 82 wherein the peripheral device is adapted to analyze an incoming signal from the processing device and if no audio is received, the incoming signal is discarded.

89. (Previously Presented) The method of claim 88 wherein if audio is received, the peripheral device will initiate an additional TCP/IP socket connection to the base unit through the communications network.

90. (Previously Presented) The method of claim 82 further comprising time-stamping synchronously the audio with the data stream.

91. (Previously Presented) The method of claim 90 further comprising encoding, optionally encrypting the audio data.

92. (Currently Amended) A system for connecting a processing device to a communications network, the processing device having a memory, a display and an operating system with pre-installed generic drivers providing a generic communications protocol for communication between processing device and a class of peripheral devices, the system comprising:

a) means for coupling an external peripheral device physically to a port of the processing device, the peripheral device comprising a wireless transceiver and a connector, said connector configured to couple to the port of the processing device;

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

c) wherein the peripheral device is configured in a way to connect the processing device to a communications network via the transceiver;

d) means for routing audio data from the processing device to the wireless transceiver via the connector of the peripheral device and the means for audio communication and means for routing the audio data from the wireless transceiver of the peripheral device to a base node over the communications network, wherein the first pre-installed generic audio driver is used for transferring the audio data between the processing device and the peripheral device.

93. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a human interface device and wherein the pre-installed generic driver is a human interface device driver.

94. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a mass storage device and wherein the pre-installed generic driver is a mass storage device driver.

95. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a composite device and wherein pre-installed generic drivers drive different device interfaces independently.

96. (Previously Presented) The system of claim 92 wherein a client application is stored on the peripheral device which when run on the processing device obtains screen scraped data.

97. (Previously Presented) The system of claim 96 wherein the client application is a portable application.

98. (Previously Presented) The system of claim 92 wherein the peripheral device is adapted to analyse an incoming signal from the processing device and if no audio is received, the incoming signal is discarded.

99. (Previously Presented) The system of claim 98 wherein if audio is received, the peripheral device will initiate an additional connection to the base unit through the communications network.

100. (Previously Presented) The system of claim 92 further comprising time-stamping synchronously the audio stream with the data stream.

101. (Previously Presented) The system of claim 100 further comprising means for encoding, optionally encrypting the audio data.

102. (Currently Amended) A peripheral device for providing communication connectivity to a processing device which is provided with memory, a display and an operating system with at least one pre-installed generic driver providing a generic communication protocol for communication between the processing device and a class of peripheral devices, the peripheral device comprising a connection configured to be physically coupled to a port of the processing device and a memory in which executable software code is stored for execution on the processing device, said executable software code comprising:

a first software code portion for setting up, by means of the pre-installed generic driver of the operating system, a means for audio communication between the peripheral device and the processing device;

a second software code portion for connecting the processing device to a communications network via a transceiver of the peripheral device;

a third software code portion for routing audio data from the processing device to the peripheral device via the connection and the means for audio communication and for routing the audio data from the peripheral device to the base node over the communications network, wherein the first pre-installed generic driver is used for transferring the audio data between the processing device and the peripheral device.

103. (Previously Presented) The method of claim 82, wherein the audio driver is a generic audio driver.

104. (Previously Presented) The method of claim 82, wherein the audio data is routed from the processing device to the peripheral device via the connector and the means for audio communication when an actuator on the peripheral device is actuated to generate a signal for the processing device to trigger transfer of the audio data.

REMARKS

Reconsideration of the pending application is respectfully requested on the basis of the following particulars.

1. Claim Amendments

Claims 82-85, 92, and 102 are amended to overcome the Examiner's enablement rejection by reintroducing the term "generic" for the drivers, as suggested by the Examiner.

Claims 86-91, 93-101, and 103-104 are left unchanged.

2. Rejection of claims 82-104 under 35 U.S.C. § 112(a) or 35 U.S.C. § 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement

Reconsideration of this rejection is respectfully requested on the basis that the amended claims comply with the enablement requirement.

Specifically, the claims have been amended to reintroduce the term "generic" for the drivers, as suggested by the Examiner. Since the skilled person would have understood how to make and use the invention, as amended, the claims comply with the enablement requirement.

Accordingly, withdrawal of this rejection is respectfully requested.

3. Conclusion

As a result of the amendments to the claims and further in view of the foregoing remarks, it is respectfully submitted that the application is in condition for allowance. Accordingly, it is requested that the currently presented claims be approved and the application passed to issue.

Please charge any additional fees required or credit any overpayments in connection with this paper to Deposit Account No. 02-0200.

If any issues remain that may be resolved by a telephone or facsimile communication with the applicant's attorney, the examiner is invited to contact the undersigned at the numbers shown below.

BACON & THOMAS, PLLC
625 Slaters Lane, Fourth Floor
Alexandria, Virginia 22314-1176
Phone: (703) 683-0500
Facsimile: (703) 683-1080

Date: October 7, 2019

Respectfully submitted,

/Thomas Lee/

THOMAS LEE
Attorney for Applicant
Registration No. 66,396

Electronic Acknowledgement Receipt	
EFS ID:	37377334
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	07-OCT-2019
Filing Date:	03-MAR-2015
Time Stamp:	10:26:44
Application Type:	U.S. National Stage under 35 USC 371

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		BEEL3004_nfoa_amnd.pdf	43156 769613f77006dcf70baf5bf5e8272576ffe208e1	yes	9

	Multipart Description/PDF files in .zip description		
	Document Description	**Start**	**End**
	Amendment/Req. Reconsideration-After Non-Final Reject	1	2
	Claims	3	7
	Applicant Arguments/Remarks Made in an Amendment	8	9
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	Total Files Size (in bytes):	43156	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

	1	U.S. Office Action in corresponding U.S. Application No. 14/278,442, dated September 18, 2019.	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-10-02
Name/Print	THOMAS LEE	Registration Number	66396

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

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

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

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EFS ID:	37340917
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee/Shelly Darrenkamp
Filer Authorized By:	Thomas Lee
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	02-OCT-2019
Filing Date:	03-MAR-2015
Time Stamp:	13:02:20
Application Type:	U.S. National Stage under 35 USC 371

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	Non Patent Literature	BEEL3001C_OA_18SEPT19.pdf	1937284 e137ef5d187dcd5af29b96209176e3d9be8fe429	no	46

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	BEEL3004_IDS.pdf	1035050 237e0ddf41b291f435f65f4251c7d68943a6a627	no	4
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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.

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. 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	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

U.S.PATENTS Remove

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

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

U.S.PATENT APPLICATION PUBLICATIONS Remove

Examiner Initial*	Cite No	Publication Number	Kind Code[1]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear
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Examiner Initial*	Cite No	Foreign Document Number[3]	Country Code[2] i	Kind Code[4]	Publication Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	T[5]
	1							

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NON-PATENT LITERATURE DOCUMENTS Remove

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

EFS Web 2.1.17

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

	1	Notice on Reexamination in corresponding Chinese Application No. 201280001542.X, dated June 11, 2019.	X

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

EXAMINER SIGNATURE

Examiner Signature		Date Considered	

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
	Application Number	14344836
	Filing Date	2015-03-03
	First Named Inventor	Koen Simon Herman BEEL
	Art Unit	2181
	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-09-11
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

Electronic Acknowledgement Receipt

EFS ID:	37135130
Application Number:	14344836
International Application Number:	
Confirmation Number:	1046
Title of Invention:	ELECTRONIC TOOL AND METHODS WITH AUDIO FOR MEETINGS
First Named Inventor/Applicant Name:	Koen Simon Herman Beel
Customer Number:	23364
Filer:	Thomas Lee
Filer Authorized By:	
Attorney Docket Number:	BEEL3004/BEU/TL
Receipt Date:	11-SEP-2019
Filing Date:	03-MAR-2015
Time Stamp:	15:56:01
Application Type:	U.S. National Stage under 35 USC 371

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)	BEEL3004_IDS.pdf	1035014 040eca0838ce15f440a263ee43cc08a0755a416a	no	4

Warnings:

Information:					
A U.S. Patent Number Citation or a U.S. Publication Number Citation is required in the Information Disclosure Statement (IDS) form for autoloading of data into USPTO systems. You may remove the form to add the required data in order to correct the Informational Message if you are citing U.S. References. If you chose not to include U.S. References, the image of the form will be processed and be made available within the Image File Wrapper (IFW) system. However, no data will be extracted from this form. Any additional data such as Foreign Patent Documents or Non Patent Literature will be manually reviewed and keyed into USPTO systems.					
2	Non Patent Literature	Notice_on_Reexamination22JUNE19.pdf	2679103 be3810d7673e0357693f7636508c253c6f4d5fe7	no	19
Warnings:					
Information:					
			Total Files Size (in bytes):	3714117	

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

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United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/344,836	03/03/2015	Koen Simon Herman Beel	BEEL3004/BEU/TL	1046

23364 7590 07/05/2019

BACON & THOMAS, PLLC
625 SLATERS LANE
FOURTH FLOOR
ALEXANDRIA, VA 22314-1176

EXAMINER	
BARTELS, CHRISTOPHER A.	

ART UNIT	PAPER NUMBER
2184	

NOTIFICATION DATE	DELIVERY MODE
07/05/2019	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):

MAIL@BACONTHOMAS.COM

Office Action Summary	Application No. 14/344,836	Applicant(s) Beel et al.	
	Examiner CHRISTOPHER A BARTELS	Art Unit 2184	AIA (FITF) Status No

-- 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 04/19/2019.

☐ 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) 82-104 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) 82-104 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 See Continuation Sheet.

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

4) ☐ Other: _____.

Continuation of Attachment(s) 2) Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) Paper No(s)/Mail Date: 04/04/2019, 04/11/2019, 05/23/2019, and 05/30/2019

Notice of Pre-AIA or AIA Status

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

DETAILED ACTION

This office action is in response to the claim listing filed on April 19TH, 2019. Claims 82-104 are currently pending.

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 03/15/2019 has been entered. Supplemental amendment 04/19/2019 has not been entered further explained in the 112 rejection

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 04/04/2019, 04/11/2019, 05/23/2019, and 05/30/2019. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112(a):

> (a) IN GENERAL.—The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor or joint inventor of carrying out the invention.

The following is a quotation of the first paragraph of pre-AIA 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same, and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 82-104 are rejected under 35 U.S.C. 112(a) or 35 U.S.C. 112 (pre-AIA), first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. In various recitations of claim 82, the phrase “pre-installed generic drivers providing a generic communications protocol” has all mention of the term “generic” removed. Such language makes the claim broader than the specification because such driver “is used for transferring the audio data between the processing device and the peripheral device” which now include drivers whether generic, proprietary and/or made by third-party developers. The Attorney’s assertion of this support, by deduction pointing to WO 2013/037980 filed 03/13/2014, only refers to a “virtual audio device” and such audio configuration using “standard

audio interface GUI" in the page range of 49 to 53 while ignoring the Pre-installed generic driver of page 31, lines 23-27.

4. The same issues are presented in independent claims 92 and 102, respectively. Thus, claims 83-91, 93-101, and 103-104 are rejected due to their respective dependencies to the independent claims. The Examiner suggests reinstating the term "generic" as apropos to the claim listing as filed on 03/15/2019 while maintaining "wireless transceiver via the connector" as agreed upon the interview (March 15th, 2019, see Remarks page 9, 04/19/2019).

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following references indicate the current state of the art and does not re-open prosecution: US 20110188391 A1 AND 20110092198 A1.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER A. BARTELS whose telephone number is (571)270-3182. The examiner can normally be reached on Monday-Friday 9:00a-5:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Henry Tsai can be reached on 571-272-4176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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

/C. B./
Examiner, Art Unit 2184

/HENRY TSAI/
Supervisory Patent Examiner, Art Unit 2184

Notice of References Cited	Application/Control No. 14/344,836	Applicant(s)/Patent Under Reexamination Beel et al.	
	Examiner CHRISTOPHER A BARTELS	Art Unit 2184	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-20110188391-A1	08-2011	Sella; Assaf	H04W24/10	370/252
*	B	US-20110092198-A1	04-2011	MIYATA; Katsuya	H04W36/0022	455/422.1
	C					
	D					
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	K					
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	M					

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	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
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

CPC - Searched*		
Symbol	Date	Examiner

CPC Combination Sets - Searched*		
Symbol	Date	Examiner
(G06F13/102, G06F3/16, G06F9/44505, H04L12/1813, H04L65/(4023 AND 4038) text search in East	11/26/2018	C.A.B.
H04M3/567 text search in East	11/26/2018	C.A.B.

US Classification - Searched*			
Class	Subclass	Date	Examiner

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

Search Notes		
Search Notes	Date	Examiner
inventor search performed in East (USPAT USOCR USPGPUB)	04/03/2017, 10/16/2017	C.A.B.
Text search performed in East (ALL DATABASES)	04/03/2017, 10/16/2017, 02/2018, 11/2018, 06/23/2019	C.A.B.

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	interference search performed in East (see handout)	11/26/2018	C.A.B.

	/C.B./ Examiner.Art Unit 2184

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

✓	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	06/23/2019	06/23/2019	06/23/2019	06/23/2019					
	1	-	-	-	-					
	2	-	-	-	-					
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	39	-	-	-	-					
	40	-	-	-	-					
	41	-	-	-	-					
	42	-	-	-	-					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

CLAIM		DATE								
Final	Original	06/23/2019	06/23/2019	06/23/2019	06/23/2019					
	43	-	-	-	-					
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	88	✓	✓	✓	✓					
	89	✓	✓	✓	✓					
	90	✓	✓	✓	✓					
	91	✓	✓	✓	✓					
	92	✓	✓	✓	✓					
	93	✓	✓	✓	✓					
	94	✓	✓	✓	✓					

Index of Claims	Application/Control No.	Applicant(s)/Patent Under Reexamination
	14/344,836	Beel et al.
	Examiner	Art Unit
	CHRISTOPHER A BARTELS	2184

CLAIM		DATE								
Final	Original	06/23/2019	06/23/2019	06/23/2019	06/23/2019					
	95	✓	✓	✓	✓					
	96	✓	✓	✓	✓					
	97	✓	✓	✓	✓					
	98	✓	✓	✓	✓					
	99	✓	✓	✓	✓					
	100	✓	✓	✓	✓					
	101	✓	✓	✓	✓					
	102	✓	✓	✓	✓					
	103				✓					
	104				✓					

Application No.: 14/344,836

AMENDMENT

Please amend the pending application in accordance with the following particulars.

In the Claims

The claims are amended as shown on the following pages under the heading LIST OF CURRENT CLAIMS. The list shows the status of all claims presently in the application and is intended to supersede all prior versions of the claims in the application. Any cancellation of claims is made without prejudice or disclaimer.

Application No.: 14/344,836

LIST OF CURRENT CLAIMS

1-81. (Cancelled)

82. (Currently Amended) A method for connecting a processing device to a communications network, the processing device having a memory, a display and an operating system with pre-installed ~~generic~~ drivers providing a ~~generic~~ communications protocol for communication between the processing device and a class of peripheral devices, the method comprising:

a) coupling an external peripheral device physically to a port of the processing device,

wherein the peripheral device ~~having~~ comprises a wireless transceiver and a connector, said connector configured to couple to the port of the processing device;

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

c) using the peripheral device to connect the processing device to a communications network via the wireless transceiver;

d) routing audio data ~~between~~ from the processing device to the wireless transceiver via the connector of the peripheral device and the means for audio communication and routing the audio data from the wireless transceiver of the peripheral device to a base node over the ~~communication~~ communications network ~~via the means for audio communication and the transceiver to a base node~~, wherein the first pre-installed ~~generic~~ audio driver is used for transferring the audio data between the processing device and the peripheral device.

83. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a human interface device and wherein the pre-installed ~~generic~~ driver is a human interface device driver.

84. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a mass storage device and wherein the pre-installed ~~generic~~ driver is a mass storage device driver.

85. (Currently Amended) The method of claim 82 wherein Step b) comprises presenting the peripheral device to the processing device as a composite device and wherein pre-installed ~~generic~~ drivers drive different device interfaces independently.

86. (Previously Presented) The method of claim 82, wherein a client application is stored on the peripheral device which when run on the processing device obtains screen scraped data.

87. (Previously Presented) The method of claim 86 wherein the client application is a portable application.

88. (Previously Presented) The method of claim 82 wherein the peripheral device is adapted to analyze an incoming signal from the processing device and if no audio is received, the incoming signal is discarded.

89. (Previously Presented) The method of claim 88 wherein if audio is received, the peripheral device will initiate an additional TCP/IP socket connection to the base unit through the communications network.

90. (Previously Presented) The method of claim 82 further comprising time-stamping synchronously the audio with the data stream.

91. (Previously Presented) The method of claim 90 further comprising encoding, optionally encrypting the audio data.

92. (Currently Amended) A system for connecting a processing device to a communications network, the processing device having a memory, a display and an operating system with pre-installed generic drivers providing a generic communications protocol for communication between processing device and a class of peripheral devices, the system comprising:

a) means for coupling an external peripheral device physically to a port of the processing device, the peripheral device ~~having~~ comprising a wireless transceiver and a connector, said connector configured to couple to the port of the processing device;

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

c) wherein the peripheral device is configured in a way to connect the processing device to a communications network via the transceiver;

d) means for routing audio data ~~between~~ from the processing device to the wireless transceiver via the connector of the peripheral device and the means for audio communication and means for routing the audio data from the wireless transceiver of the peripheral device to a base node over the ~~communication~~ communications network ~~via the means for audio communication and the transceiver to a base node~~, wherein the first pre-installed ~~generic~~ audio driver is used for transferring the audio data between the processing device and the peripheral device.

93. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a human interface device and wherein the pre-installed generic driver is a human interface device driver.

94. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a mass storage device and wherein the pre-installed generic driver is a mass storage device driver.

95. (Previously Presented) The system of claim 92 further comprising means for presenting the peripheral device to the processing device as a composite device and wherein pre-installed generic drivers drive different device interfaces independently.

96. (Previously Presented) The system of claim 92 wherein a client application is stored on the peripheral device which when run on the processing device obtains screen scraped data.

97. (Previously Presented) The system of claim 96 wherein the client application is a portable application.

98. (Previously Presented) The system of claim 92 wherein the peripheral device is adapted to analyse an incoming signal from the processing device and if no audio is received, the incoming signal is discarded.

99. (Previously Presented) The system of claim 98 wherein if audio is received, the peripheral device will initiate an additional connection to the base unit through the communications network.

100. (Previously Presented) The system of claim 92 further comprising time-stamping synchronously the audio stream with the data stream.

101. (Previously Presented) The system of claim 100 further comprising means for encoding, optionally encrypting the audio data.

102. (Currently Amended) A peripheral device for providing communication connectivity to a processing device which is provided with memory, a display and an operating system with at least one pre-installed generic driver providing a generic communication protocol for communication between the processing device and a class of peripheral devices, the peripheral device comprising a connection configured to be physically coupled to a port of the processing device and a memory in which executable software code is stored for execution on the processing device, said executable software code comprising:

a first software code portion for setting up, by means of the pre-installed generic driver of the operating system, a means for audio communication between the peripheral device and the processing device;

a second software code portion for connecting the processing device to a communications network via a transceiver of the peripheral device;

a third software code portion for routing audio data ~~between~~ from the processing device to the peripheral device via the connection and the means for audio communication and for routing the audio data from the peripheral device to the base node over the ~~communication~~ communications network ~~via the means for audio communication and the transceiver to a base node~~, wherein the first pre-installed generic driver is used for transferring the audio data between the processing device and the peripheral device.

103. (New) The method of claim 82, wherein the audio driver is a generic audio driver.

104. (New) The method of claim 82, wherein the audio data is routed from the processing device to the peripheral device via the connector and the means for audio communication

when an actuator on the peripheral device is actuated to generate a signal for the processing device to trigger transfer of the audio data.

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

PTO/SB/08a (03-15)
Approved for use through 07/31/2016. OMB 0651-0031
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT
(Not for submission under 37 CFR 1.99)

Application Number	14344836
Filing Date	2015-03-03
First Named Inventor	Koen Simon Herman BEEL
Art Unit	2181
Examiner Name	Christopher A. Bartels
Attorney Docket Number	BEEL3004/BEU/TL

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

/C.A.B/	1	European Office Action in corresponding European Application No. 16170760.9-1216, dated April 2, 2019.	

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EXAMINER SIGNATURE

Examiner Signature	/CHRISTOPHER A BARTELS/	Date Considered	05/17/2019

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

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)		
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	Examiner Name	Christopher A. Bartels
	Attorney Docket Number	BEEL3004/BEU/TL

CERTIFICATION STATEMENT

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

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

OR

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

See attached certification statement.

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

A certification statement is not submitted herewith.

SIGNATURE

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

Signature	/Thomas Lee/	Date (YYYY-MM-DD)	2019-04-04
Name/Print	THOMAS LEE	Registration Number	66396

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

Privacy Act Statement

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

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

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

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

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

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

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

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

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

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

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

AMENDMENT

Please amend the pending application in accordance with the following particulars.

In the Claims

The claims are amended as shown on the following pages under the heading LIST OF CURRENT CLAIMS. The list shows the status of all claims presently in the application and is intended to supersede all prior versions of the claims in the application. Any cancellation of claims is made without prejudice or disclaimer.

LIST OF CURRENT CLAIMS

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