



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : H04N 7/15, H04M 3/56, H04L 12/18	A3	(11) International Publication Number: WO 95/10158 (43) International Publication Date: 13 April 1995 (13.04.95)
---	----	---

(21) International Application Number: PCT/US94/11193

(22) International Filing Date: 3 October 1994 (03.10.94)

(30) Priority Data:
08/131,523 1 October 1993 (01.10.93) US(71) Applicant (for all designated States except US): VICOR, INC.
[US/US]; 264 Village Boulevard, Unit 2B, Incline Village,
NV 89451 (US).

(72) Inventors; and

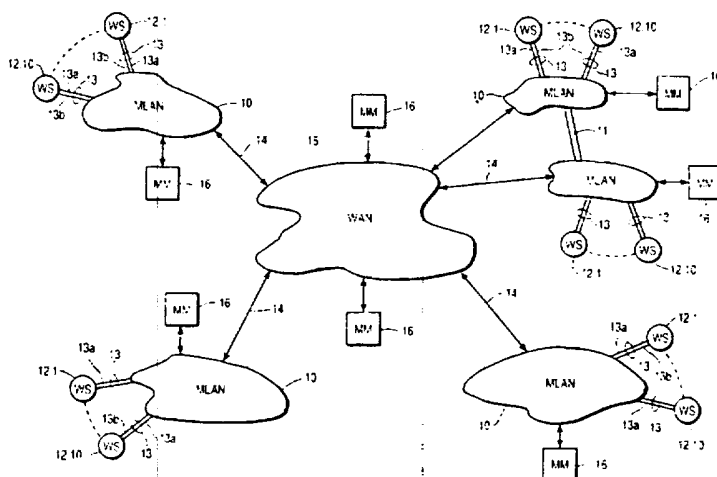
(75) Inventors/Applicants (for US only): LUDWIG, Lester, F.
[US/US]; 548 Trinidad Lane, Foster City, CA 94404 (US).
LAUWERS, J., Chris [BE/US]; Apartment H-210, 350
Sharon Park Drive, Menlo Park, CA 94025 (US). LANTZ,
Keith, A. [US/US]; 1225 Eureka Avenue, Los Altos, CA
94024 (US). BURNETT, Gerald, J. [US/US]; 207 Atherton
Avenue, Atherton, CA 94027 (US). BURNS, Emmett, R.
[US/US]; P.O. Box 7813, Incline Village, NV 89452 (US).(74) Agents: LAURIE, Ronald, S. et al.; Cooley Godward Castro
Huddleson & Tatum, 4th floor, 5 Palo Alto Square, Palo
Alto, CA 94306 (US).(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH,
CN, CZ, DE, DK, ES, FI, GB, GE, HU, JP, KE, KG, KP,
KR, KZ, LK, LT, LU, LV, MD, MG, MN, MW, NL, NO,
NZ, PL, PT, RO, RU, SD, SE, SI, SK, TJ, TT, UA, US,
UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR,
GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF,
BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG),
ARIPO patent (KE, MW, SD, SZ).

Published

With international search report.

Before the expiration of the time limit for amending the
claims and to be republished in the event of the receipt of
amendments.(88) Date of publication of the international search report:
26 May 1995 (26.05.95)

(54) Title: MULTIMEDIA COLLABORATION SYSTEM



(57) Abstract

A collaboration system that integrates separate real-time and asynchronous networks - the former for real-time audio and video, and the latter for control signals and textual, graphical and other data - in a manner which closely approximates the experience of face-to-face collaboration. These capabilities are achieved by exploiting a variety of hardware, software and networking technologies in a manner that preserves the quality and integrity of audio/video/data and other multimedia information, even after wide area transmission, and at a significantly reduced networking cost as compared to what would be required by presently known approaches. The system architecture is readily scalable to the largest enterprise network environments. It accommodates differing levels of collaborative capabilities available to individual users and permits high-quality audio and video capabilities to be readily superimposed onto existing personal computers and workstations (12) and their interconnecting LANs (10) and WANs (15). In the case of a plurality of geographically dispersed LANs (10) interconnected by a WAN (15), the demands made on the WAN are significantly reduced by employing multi-hopping techniques, including avoiding the unnecessary decompression of data at intermediate hops, as well as video mosaicing and cut-and-paste technology.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/US 94/11193

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 H04N7/15 H04M3/56 H04L12/18

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 6 H04N H04M H04L

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 practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	TRANSACTIONS OF THE INSTITUTE OF ELECTRONICS, INFORMATION AND COMMUNICATION ENGINEERS OF JAPAN, vol.E74, no.9, September 1991, TOKYO JP pages 2765 - 2770 KAZUTOSHI MAENO ET AL 'DISTRIBUTED DESKTOP CONFERENCING SYSTEM (MERMAID) BASED ON GROUP COMMUNICATION ARCHITECTURE' see paragraph 3	1-6
Y	INTERNATIONAL CONFERENCE ON COMMUNICATIONS- SESSION 27.6, vol.2/3, 23 June 1991, DENVER(US) pages 859 - 865 YIU-WING LEUNG ET AL 'OPTIMUM CONNECTION PATHS FOR A CLASS OF VIDEOCONFERENCES' see paragraph 2	1-6

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in 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 document but published on or after the international filing date
- "I" 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

9 January 1995

Date of mailing of the international search report

27.04.95

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Vandevenne, M

INTERNATIONAL SEARCH REPORT

Inter national Application No

PCT/US 94/11193

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	IEEE INTERNATIONAL CONFERENCE ON COMMUNICATIONS- SESSION 212.1., vol.1/4, 15 April 1990, ATLANTA(US) pages 134 - 139 CHRISTOPH WEISS 'DESK TOP VIDEO CONFERENCING- AN IMPORTANT FEATURE OF FUTURE VISUAL COPMMUNICATIONS' see page 134, left column, line 1 - line 52 see page 136, left column, line 1 - right column, line 3 ---	1,3-5
Y	CONFERENCE ON ORGANIZATIONAL COMPUTING SYSTEMS, vol.12, no.2 3, 5 November 1991, ATLANTA(US) pages 43 - 54 HARRICK M. VIN ET AL 'HIERARCHICAL CONFERENCING ARCHITECTURES FOR INTER-GROUP MULTIMEDIA COLLABORATION' see paragraph 3 ---	4,5
A	THE 12TH INTERNATIONAL CONFERENCE ON DISTRIBUTED COMPUTING SYSTEMS, 9 June 1992, YOKOHAMA(JP) pages 46 - 53 SRINIVAS RAMANATHAN ET AL 'OPTIMAL COMMUNICATION ARCHITECTURES FOR MULTIMEDIA CONFERENCING IN DISTRIBUTED SYSTEMS' ---	
A	EP,A,0 523 626 (HITACHI LTD) 20 January 1993 see column 10, line 27 - column 11, line 35 ---	
A	EP,A,0 190 060 (BULL S.A.) 6 August 1986 ---	
A	EP,A,0 561 381 (FISCHER & PORTER COMP.) 22 September 1993 -----	

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 94/ 11193

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see Annex

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-6

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/210

1. Claims 1-6 Teleconferencing system with features A, comprising an AV signal switcher, routing AV signals from a first to a second location via a third location.
2. Claims 7-14, 24-34, 38-39, 48, 65-67 Teleconferencing system with features A, comprising a data conference manager and/or an AV conference manager.
3. Claims 15-23, 69 Teleconferencing system with features A, comprising a video mosaic generator.
4. Claims 35-37 Teleconferencing system with features A, comprising a common collaboration initiator.
5. Claims 40-47, 49, 50 Teleconferencing system with features A, comprising means for detection and handling of call service requests (incoming call detection, acceptance, hold, disconnector or add mechanisms)
6. Claims 51-64 Teleconferencing system with features A, comprising a data conference capture tools and/or an AV conference capture tools.
7. Claim 68 Teleconferencing system with features A, comprising a method of synchronizing the display of images.

INTERNATIONAL SEARCH REPORT

information on patent family members

Inter. nal Application No

PCT/US 94/11193

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP-A-0523626	20-01-93	JP-A- 5022321	29-01-93
		AU-B- 645210	06-01-94
		AU-A- 1964192	21-01-93
		US-A- 5365265	15-11-94

EP-A-0190060	06-08-86	FR-A- 2575882	11-07-86
		DE-A- 3661457	19-01-89

EP-A-0561381	22-09-93	US-A- 5243596	07-09-93
