

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number  
**WO 2004/114648 A3**

(51) International Patent Classification<sup>7</sup>: **H04N 7/18**

(21) International Application Number:  
PCT/US2004/019722

(22) International Filing Date: 21 June 2004 (21.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/479,950 19 June 2003 (19.06.2003) US

(71) Applicant (for all designated States except US):  
**SARNOFF CORPORATION** [US/US]; 201 Wash-  
ington Road, Princeton, New Jersey 08543 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **SAMARASEK-  
ERA, Supun** [US/US]; 24 Blackstone Drive, Princeton,  
New Jersey 08540 (US). **KUMAR, Rakesh** [IN/US]; 966  
Ridge Road, Monmouth Junction, New Jersey 08852 (US).  
**HANNA, Keith** [GB/US]; 30 Scott Avenue, Princeton  
Junction, New Jersey 08544 (US). **SAWHNEY, Harpreet**

[US/US]; 17 Melville Road, West Windsor, New Jersey  
08550 (US). **ARPA, Aydin** [TR/US]; 1815 Ravens Crest,  
Plainsboro, New Jersey 08536 (US). **AGGARWAL,  
Manoj** [IN/US]; 4817 Ravens Crest Drive, Plainsboro,  
New Jersey 08536 (US). **PARAGANO, Vincent** [US/US];  
71 Bunker Hill, Lawrenceville, New Jersey 08648 (US).

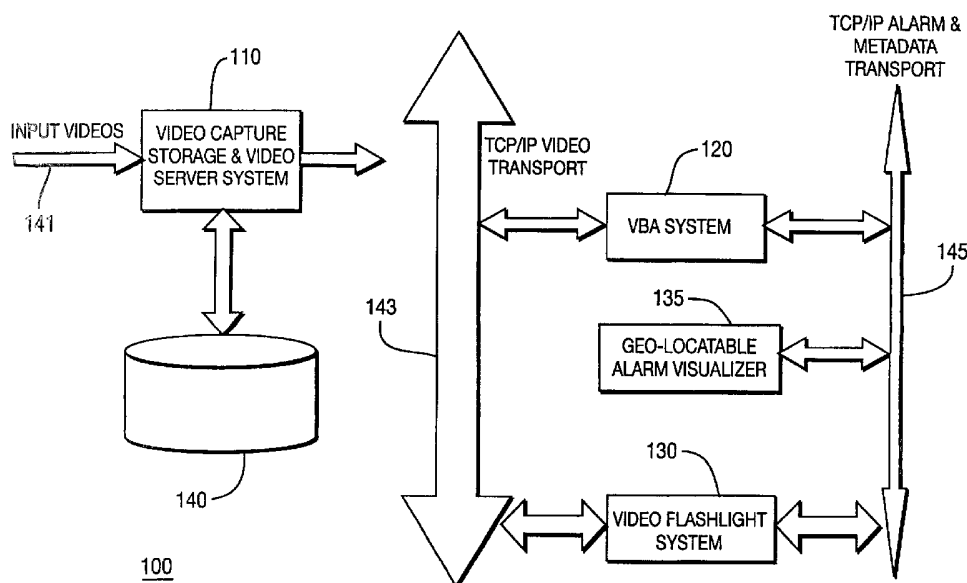
(74) Agent: **TONG, Kin-Wah**; Moser, Patterson & Sheridan,  
LLP, 595 Shrewsbury Avenue, Shrewsbury, New Jersey  
07701 (US).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

(84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR PROVIDING A SCALABLE MULTI-CAMERA DISTRIBUTED VIDEO PRO-  
CESSING AND VISUALIZATION SURVEILLANCE SYSTEM



(57) Abstract: A scalable architecture for providing real-time multi-camera distributed video processing and visualization. An exemplary system comprises at least one video capture and storage system (140) for capturing and storing a plurality of alarm situations or events, and at least one video rendering system for displaying an alarm situation in a context that speeds up comprehension and response. One advantage of the present architecture is that these systems are scalable, such that additional sensors (e.g. cameras, motion sensors, infrared sensors, chemical sensors, biological sensors, temperature sensors and the like) can be added in large numbers without overwhelming the ability of security forces to comprehend the alarm situation.



ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,  
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,  
SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ,  
GW, ML, MR, NE, SN, TD, TG).

**(88) Date of publication of the international search report:**  
14 April 2005

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- *with international search report*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US04/19722

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : H04N 7/18

US CL : 348/152

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)

U.S. : 348/152, 153, 154, 155

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)  
EAST

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,144,375 A (JAIN et al) 07 November 2000 (7.11.2000) Figure 1	1-10
X	US 6,424,370 B1 (COURTNEY) 23 July 2002 (23.7.2002) See columns 5 and 6	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

"B" earlier application or patent 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

14 February 2005 (14.02.2005)

Date of mailing of the international search report

08 MAR 2005

Name and mailing address of the ISA/US

Mail Stop PCT, Attn: ISA/US

Commissioner for Patents

P.O. Box 1450

Alexandria, Virginia 22313-1450

Facsimile No. (703)305-3230

Authorized officer

Chris Kelley

Telephone No. 703-305-4750