



US007365871B2

(12) **United States Patent**
Monroe

(10) **Patent No.:** **US 7,365,871 B2**
(45) **Date of Patent:** **Apr. 29, 2008**

(54) **APPARATUS FOR CAPTURING, CONVERTING AND TRANSMITTING A VISUAL IMAGE SIGNAL VIA A DIGITAL TRANSMISSION SYSTEM**

(76) Inventor: **David A. Monroe**, 740 Lincoln Center, 7800 IH-10 West, San Antonio, TX (US) 78230

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **10/336,470**

(22) Filed: **Jan. 3, 2003**

(65) **Prior Publication Data**

US 2004/0001214 A1 Jan. 1, 2004

Related U.S. Application Data

(62) Division of application No. 09/006,073, filed on Jan. 12, 1998, now abandoned.

(51) **Int. Cl.**
G06K 1/00 (2006.01)
H04N 1/00 (2006.01)

(52) **U.S. Cl.** **358/1.15; 358/402; 358/403; 358/407**

(58) **Field of Classification Search** 358/1.15, 358/402, 403, 407, 442, 468, 474
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,642,492 A	6/1953	Hammond, Jr.	348/24
3,251,937 A	5/1966	Hoag	358/410
3,751,159 A	8/1973	Fisher	355/20
3,864,514 A	2/1975	Lemelson	358/409
4,074,324 A	2/1978	Barrett	358/296

4,163,283 A	7/1979	Darby
4,179,695 A	12/1979	Levine et al.
4,197,536 A	4/1980	Levine
4,516,125 A	5/1985	Schwab et al.
4,530,014 A	7/1985	D'Alayer de Costemore D'Arc ...
4,652,926 A	3/1987	Withers et al.
4,688,244 A *	8/1987	Hannon et al.
4,831,438 A	5/1989	Bellman, Jr. et al.
4,845,629 A	7/1989	Murge
4,857,912 A	8/1989	Everett, Jr. et al.
4,884,132 A *	11/1989	Morris et al.
4,891,650 A	1/1990	Sheffer
4,910,692 A	3/1990	Outram

(Continued)

FOREIGN PATENT DOCUMENTS

EP 220752 5/1987

(Continued)

OTHER PUBLICATIONS

Anonymous, "New & Old: Web-ready Camera Server, LAN Video Connects", Security Distributing & Marketing; Apr. 1998; 28, 5; p. 58.

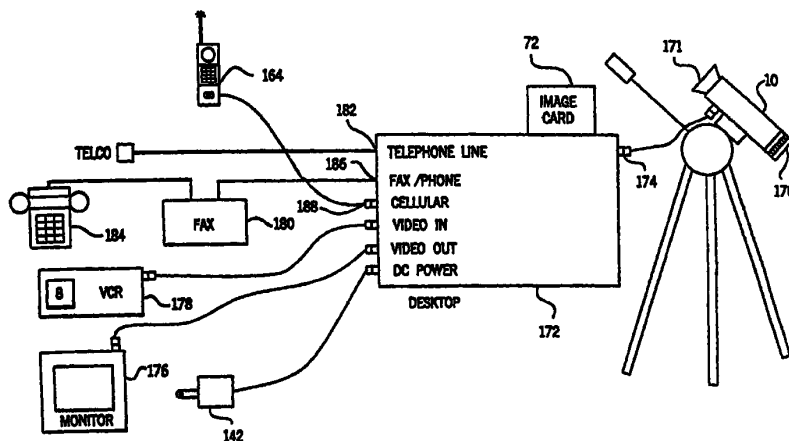
(Continued)

Primary Examiner—Houshang Safaipoor

(57) **ABSTRACT**

An image capture, conversion, compression, storage and transmission system provides a data signal representing the image in a format and protocol capable of being transmitted over any of a plurality of readily available transmission systems and received by readily available, standard equipment receiving stations. In its most comprehensive form, the system is capable of sending and receiving audio, documentary and visual image data to and from standard remote stations readily available throughout the world.

15 Claims, 73 Drawing Sheets



U.S. PATENT DOCUMENTS

4,937,676 A 6/1990 Finelli et al. 348/375
 4,942,477 A 7/1990 Nakamura 358/401
 5,027,104 A 6/1991 Reid
 5,027,114 A 6/1991 Kawashime et al.
 5,032,911 A 7/1991 Takimoto 358/501
 5,047,870 A 9/1991 Filo 358/472
 5,091,780 A 2/1992 Pomerleau
 5,109,278 A 4/1992 Erickson
 5,111,291 A 5/1992 Erickson
 5,166,746 A 11/1992 Sato et al.
 5,191,601 A * 3/1993 Ida et al. 348/14.01
 5,193,012 A 3/1993 Schmidt 358/3.16
 5,218,367 A 6/1993 Sheffer et al.
 5,235,432 A 8/1993 Creedon et al. 358/479
 5,243,340 A 9/1993 Norman et al.
 5,243,530 A 9/1993 Stanifer et al.
 5,268,698 A 12/1993 Smith, Sr. et al.
 5,283,643 A 2/1994 Fujimoto
 5,321,615 A 6/1994 Frisbie et al.
 5,334,982 A 8/1994 Owen
 5,351,194 A 9/1994 Rose et al.
 5,400,031 A 3/1995 Fitts
 5,408,330 A 4/1995 Squicciarini et al.
 5,412,708 A * 5/1995 Katz 348/14.05
 5,432,838 A 7/1995 Purchase
 5,440,337 A 8/1995 Henderson et al.
 5,440,343 A 8/1995 Parulski
 5,448,243 A 9/1995 Bethke et al.
 5,463,595 A 10/1995 Rodhall et al.
 5,469,371 A 11/1995 Bess
 5,497,149 A 3/1996 Fast
 5,508,736 A 4/1996 Cooper
 5,509,009 A 4/1996 Laycock
 5,515,176 A 5/1996 Galen et al. 358/403
 5,517,683 A * 5/1996 Collett et al. 455/575.1
 5,530,440 A 6/1996 Denzer et al.
 5,539,452 A 7/1996 Bush et al. 348/14.13
 5,546,194 A 8/1996 Ross 358/445
 5,550,646 A 8/1996 Hassan et al. 358/442
 5,553,609 A 9/1996 Chen et al.
 5,557,254 A 9/1996 Johnson et al.
 5,557,278 A 9/1996 Piccirillo et al.
 5,598,167 A 1/1997 Zjderhand
 5,612,668 A 3/1997 Scott
 5,627,753 A 5/1997 Brankin et al.
 5,629,691 A 5/1997 Jain
 5,636,122 A 6/1997 Shah et al.
 5,642,285 A 6/1997 Woo
 5,666,157 A 9/1997 Avid
 5,666,159 A 9/1997 Parulski et al. 348/211.2
 5,670,961 A 9/1997 Tomote et al.
 5,677,979 A 10/1997 Squicciarini
 5,684,716 A 11/1997 Freeman 345/723
 5,689,300 A 11/1997 Shibata et al. 348/14.07
 5,689,442 A 11/1997 Swanson
 5,712,679 A 1/1998 Coles
 5,712,899 A 1/1998 Pace, II
 5,714,948 A 2/1998 Farmakis et al.
 5,742,336 A 4/1998 Lee
 5,751,346 A 5/1998 Dozier
 5,777,551 A 7/1998 Hess
 5,777,580 A 7/1998 Janky et al.
 5,793,416 A 8/1998 Rostoker et al.
 5,825,283 A 10/1998 Camhi
 5,835,059 A 11/1998 Nadel et al.
 5,850,180 A 12/1998 Hess
 5,867,804 A 2/1999 Pilley et al.
 5,917,405 A 6/1999 Joso
 5,926,210 A 7/1999 Hackett et al.
 5,933,098 A 8/1999 Haxton
 5,938,706 A 8/1999 Feldman

5,974,158 A 10/1999 Auty et al.
 5,983,161 A 11/1999 Lemelson et al.
 5,999,116 A 12/1999 Evers
 6,002,427 A 12/1999 Kipust
 6,009,356 A 12/1999 Monroe
 6,067,571 A 5/2000 Igarashi et al.
 6,069,655 A 5/2000 Seeley
 6,072,600 A 6/2000 Wertsberger 358/479
 6,078,850 A 6/2000 Kane et al.
 6,084,510 A 7/2000 Lemelson et al.
 6,092,008 A 7/2000 Bateman
 6,100,964 A 8/2000 De Cremiers
 6,133,941 A 10/2000 Ono
 6,154,658 A 11/2000 Caci
 6,157,317 A 12/2000 Walker
 6,181,373 B1 1/2001 Coles
 6,195,609 B1 2/2001 Pilley et al.
 6,226,031 B1 5/2001 Barraciough et al.
 6,246,320 B1 6/2001 Monroe
 6,259,475 B1 7/2001 Ramachandran et al.
 6,275,231 B1 8/2001 Obradovich
 6,278,965 B1 8/2001 Glass et al.
 6,282,488 B1 8/2001 Castor et al.
 6,292,098 B1 9/2001 Ebata
 6,356,625 B1 3/2002 Casteiani
 6,385,772 B1 5/2002 Courtney
 6,424,370 B1 7/2002 Courtney
 6,462,697 B1 10/2002 Klamer et al.
 6,476,858 B1 11/2002 Ramirez Diaz et al.
 6,504,479 B1 1/2003 Lemons
 6,522,352 B1 2/2003 Strandwitz et al.
 6,525,761 B2 2/2003 Sato et al.
 6,549,130 B1 4/2003 Joso
 6,556,241 B1 4/2003 Yoshimura et al.
 6,570,610 B1 5/2003 Kipulst
 6,628,835 B1 9/2003 Brill
 6,646,676 B1 11/2003 DeGrace
 6,662,649 B1 12/2003 Knight et al.
 6,675,386 B1 1/2004 Hendricks et al.
 6,698,021 B1 2/2004 Amini
 6,720,990 B1 4/2004 Walker et al.
 7,113,971 B1 9/2006 Ohi et al.
 2003/0071899 A1 4/2003 Joso
 2005/0055727 A1 3/2005 Creamer et al.
 2005/0138083 A1 6/2005 Rastegar

FOREIGN PATENT DOCUMENTS

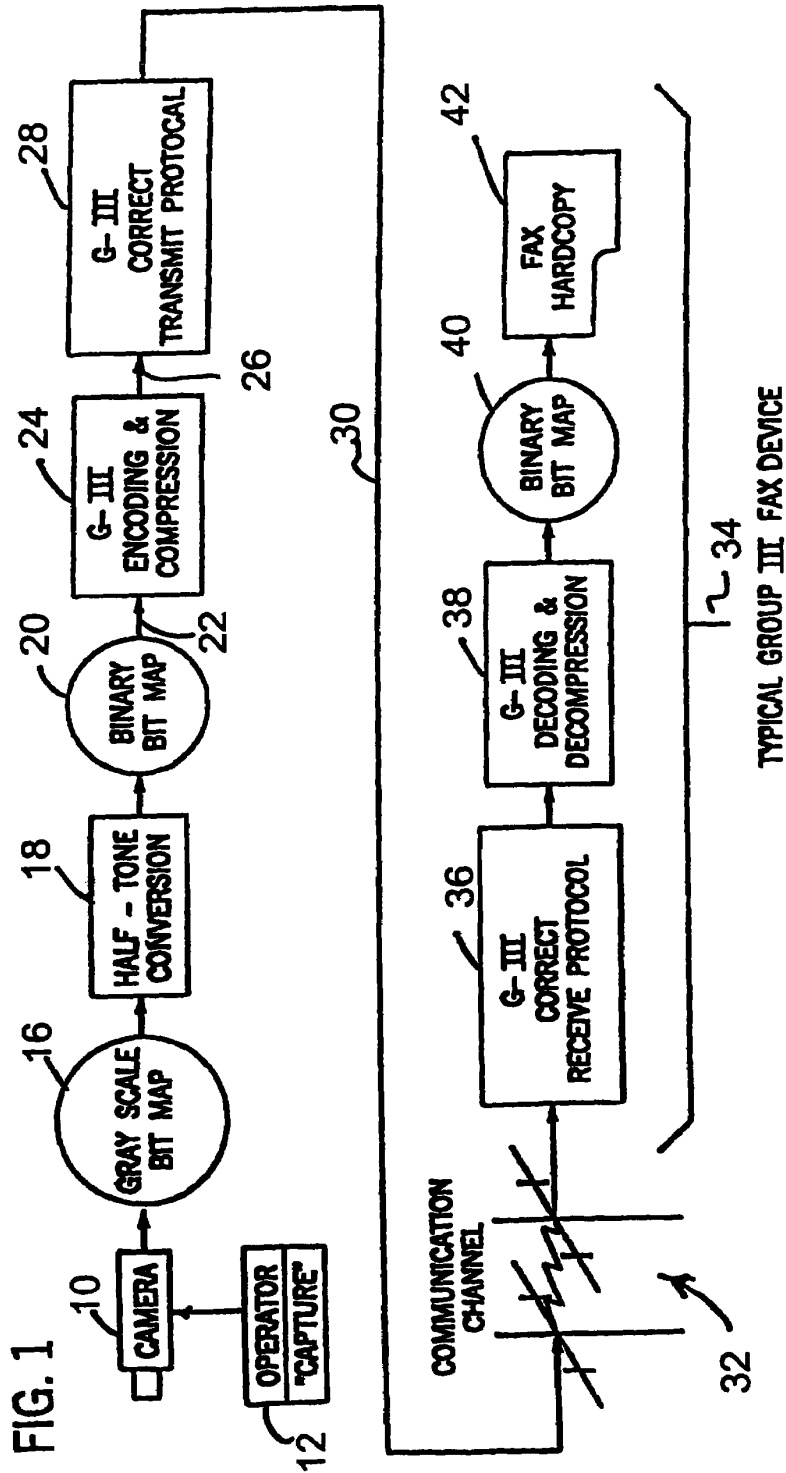
EP 232031 8/1987
 EP 532110 3/1993
 EP 209397 7/1993
 EP 613109 8/1994
 EP 613110 8/1994
 EP 613111 8/1994
 EP 744630 11/1996
 EP 785536 7/1997
 JP 06-268582 A * 9/1994
 JP 6-301898 10/1994
 JP 9-282600 10/1997
 JP HEI-10-66058 3/1998
 JP A-10-155040 6/1998
 JP 9-251599 4/1999
 JP 11-160424 6/1999
 WO WO90/04242 4/1990
 WO WO95/27910 10/1995
 WO WO96/12265 4/1996
 WO WO97/37336 10/1997
 WO WO98/52174 11/1998

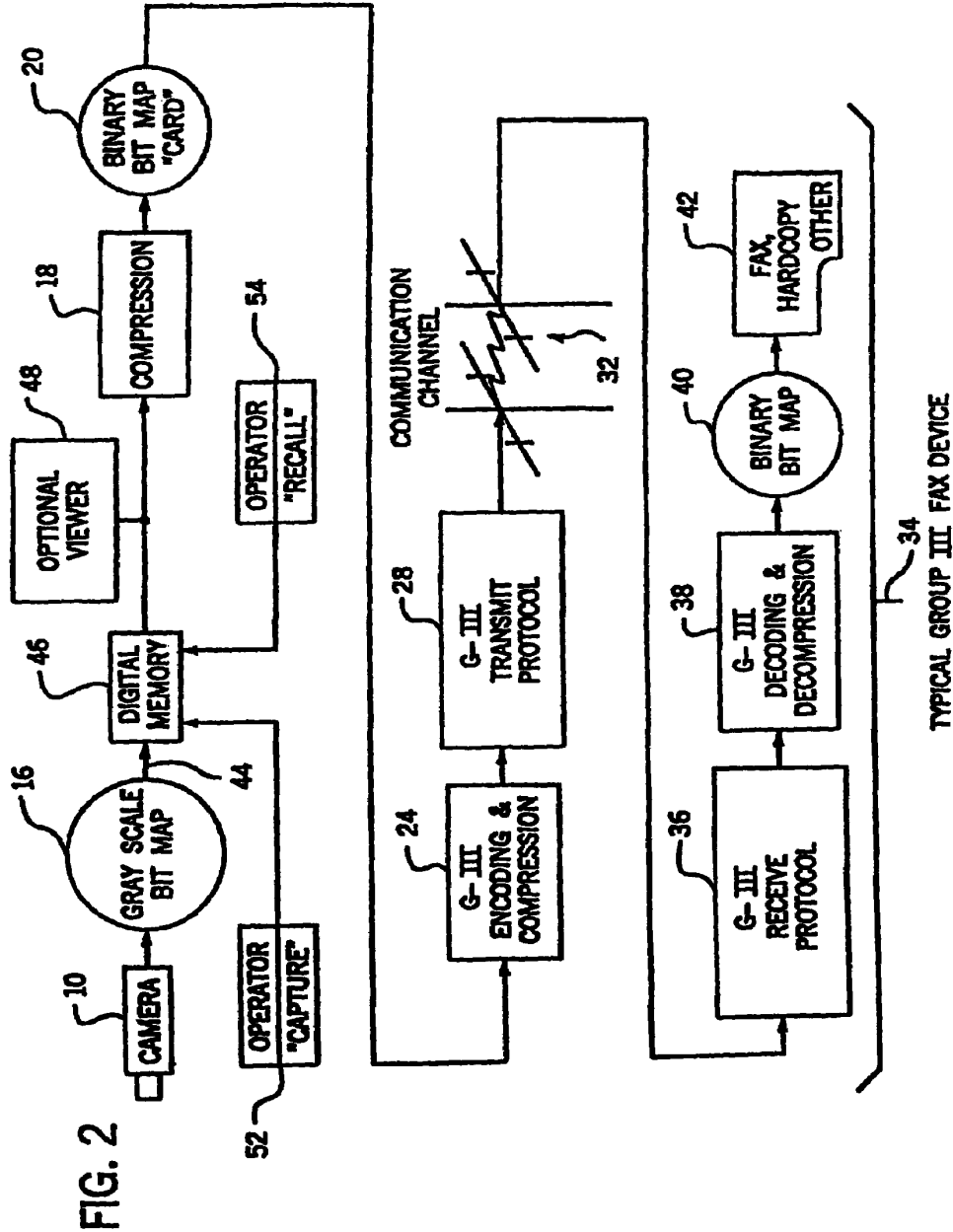
OTHER PUBLICATIONS

Anonymous, "The Eye's Mind: the Brains Behind Online Monitoring", Security: Jun. 1998; 35, 6; p. 68.

- Zalud, Bill, "New & Old: Web-ready Camera Server, LAN Video", Security: Mar. 1998; 35,3; p. 52.
- Mesenbrink, John, "Remote Video Surveillance: Breakthroughs Continue in LANs, WANs", Security Distributing & Marketing; Mar. 2000; 30.4, p. 23.
- Mahonen, Petri, "Wireless Video Surveillance: System Concepts", Proceedings International Conference on Image Analysis and Processing, ICIAP'99.
- Colombo, Ailan B., "Internet Video: Ride the Wave" Security Distributing & Marketing, Oct. 2000; 30, 13, p. 71.
- Anonymous, "SIA Police Chiefs Call Meeting on Public CCTV Law", Security, Jan. 1999; 35, 1, p. 52.
- Mesenbrink, John, "Remote Video Surveillance: The Best of Both Worlds", Security: Mar. 2000; 37, 3, p. 37.
- Anonymous, "School District sets Video Surveillance Standard", Security, Jun. 2000; 37, 6; p. 43.
- Gold, Lessing E., "Remote Surveillance saves time, money", Security Distributing & Marketing, Jan. 1999; 29, 1, p. 105.
- Anonymous, "Video Security System Alternative", Community Banker; Sep. 2000; 9,9, p. 52.
- Zalud, Bill, "Conquering Digital Marks CCTV Innovations", Security, Apr. 2000; 37, 4, p. 43.
- Anonymous, "Surveillance Cameras Harbour Racing Secrets", Security, Jan. 2000; 37, 1, p. 29.
- Everett, H.R., Laird, R.T., Gilbreath, G., Heath-Pastore, T.A., Inderieden, R.S., Grant, K., Jaffee, D.M., "Multiple Resource Host Architecture for the Mobile Detection Assessment and Response System", Space & Naval Warfare Systems Center; Technical Document 3026; Aug. 1998.
- Collins, Robert T., Lipton, Alan J., Kanade, Takeo, Fujiyoshi, Hironobu, Duggins, David, Tsin, Yanghai, Tolliver, David, Enomoto, Nobuyoshi, Hasegawa, Osamo, Burt, Peter, Wixson, Lambert, "A system for Video Surveillance and Monitoring", CMU-RI-TR-00-12; 2000 Carnegie Mellon University.
- Wiggins, A.E., "Helsinki Journey Time Monitoring System", May 12, 1999 at IEE; CCTV and Road Surveillance.
- Kuo, Chin-Hwa, Wang, Tay-Shen, "Design of Networked Visual Monitoring Systems", ISCAS 2000—IEEE Int'l Symposium on Circuits and Systems, May 28-31, 2000, pp. 297-300.
- Harrison, Ian, Lupton, David, "Automatic Road Traffic Event Monitoring Information System (ARTEMIS)", May 12, 1999 at IEE; CCTV and Road Surveillance.
- Bradbury, Spencer, "A Paper on Communications Protocols and Compression Techniques for Digital CCTV Applications" May 12, 1999 at IEE; CCTV and Road Surveillance.
- Wunnava, Subbarso V., De La Cruz, Moises, "WEB Based Remote Security System (WRSS) Model Development", Proceedings of IEEE SE Con 2000, Apr. 7-9, 2000, pp. 379-382.
- Bryan, W.D., Nguyen, H.G., Gage, D.W., "Man-Portable Networked Sensor System," SPIE Cfr on Sensor Technology f/Soldier Systems, Apr. 1998, SPIE vol. 3394, pp. 79-88.
- Balch, Kris, "Replacing 16mm Airborne Film Cameras w/Commercial-Off-The-Shelf Digital Imaging," SPIE Cfr—Digitization of Battlespace III, Apr. 1998, SPIE vol. 3393, pp. 226-237.
- Hata, Tsukada, BOH, Satoru, Tsukada, Akira, Ozaki, Minoru, "User interface using 3D model for video surveillance," SPIE vol. 3228, pp. 238-246.
- Yamashiro, Zuiki, Yoshiada, Toshihiro, Utilizing Picture Information in the Traffic Field: The Intelligent Integrated ITV Systems (IIIS), (IITS), Proceedings of the 1999 IEEE/IEEJ/JSAI International Conference on Intelligent Transportation Systems, Oct. 5-8, 1999, pp. 224-229.
- Sato, Kazuya, Tsukada, Akihiro, Matsuda, Furnio, Kawasaki, Kaoru, Ozaki, Minoru, "Multimedia Systems for Industrial Surveillance," SPIE vol. 3020, pp. 182-19.
- Maeda, Hiromi, "About the Internet as ITS" Proceedings of the 1999 IEEE/IEEJ/JSAI International Conference on Intelligent Transportation Systems, Oct. 5-6, 1999, pp. 478-483.
- Infographics Systems, "Network Video Recorder eWave NVR Series Digital Recorder/Administrators Manual," 2001, pp. 1-47.
- Gage, Douglas W., Bryan, W. Dale, Nguyen, Hoa G., "Interneting tactical security sensor systems," SPIE Cfr Digitization of Battlespace III; Apr. 1998, SPIE vol. 3393, pp. 184-194.
- Kohno, Atsushi, Hata, Toshihiko, Ozaki, Minoru, "Moving Object Detection Method Using H.263 Video Coded Data for Remote Surveillance Systems" IS&T/SPIE Cfr on Videometrics VI, Jan. 1999, SPIE vol. 3641, pp. 247-258.
- Gage, Douglas W., "Network Protocols for Mobile Robot Systems", SPIE vol. 3210, pp. 107-118.
- Laird, R.T., Everett, H.R., Gilbreath, G.A., Heath-Pastore, T.A., Inderieden, R.S., "MDARS Multiple Robot Host Architecture", Assn. of Unmanned Vehicle Systems, Jul. 10-12, 1995.
- Smart, J., "Integrated Workstations for Reliable, Site-Independent Security Monitoring and Control", IEEE Publication CH22645-0/88/0000-0145; 1998; pp. 145-149.
- Apr. 1966, Apollo Unified S-Band System, NASA-Goddard Space Flight Center, Greenbelt, Maryland.
- Nov. 24, 1997, TELEXIS ViaNet General Information Booklet Version 1.3.
- 2000, ViaNet 3000 Administrator's Manual Version 1.1-NetXpress Video by TELEXIS, Kanata, Ontario, Canada.
- 1999, ViaNet 3000 Operator Manual Version 1.0 by TELEXIS-NetXpress Video, Kanta, Ontario, Canada.
- 1999, viaNet 3000 Administrator Manual Version 1.0-NetXpress Video by TELEXIS, Kanata, Ontario, Canada.
- 1999, ViaNet 3000 Instruction Manual Operator's Revision 1-NetXpress Video by TELEXIS, Kanata, Ontario, Canada.

* cited by examiner





Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.