Prior Art Search Report

US 6,698,021 B2

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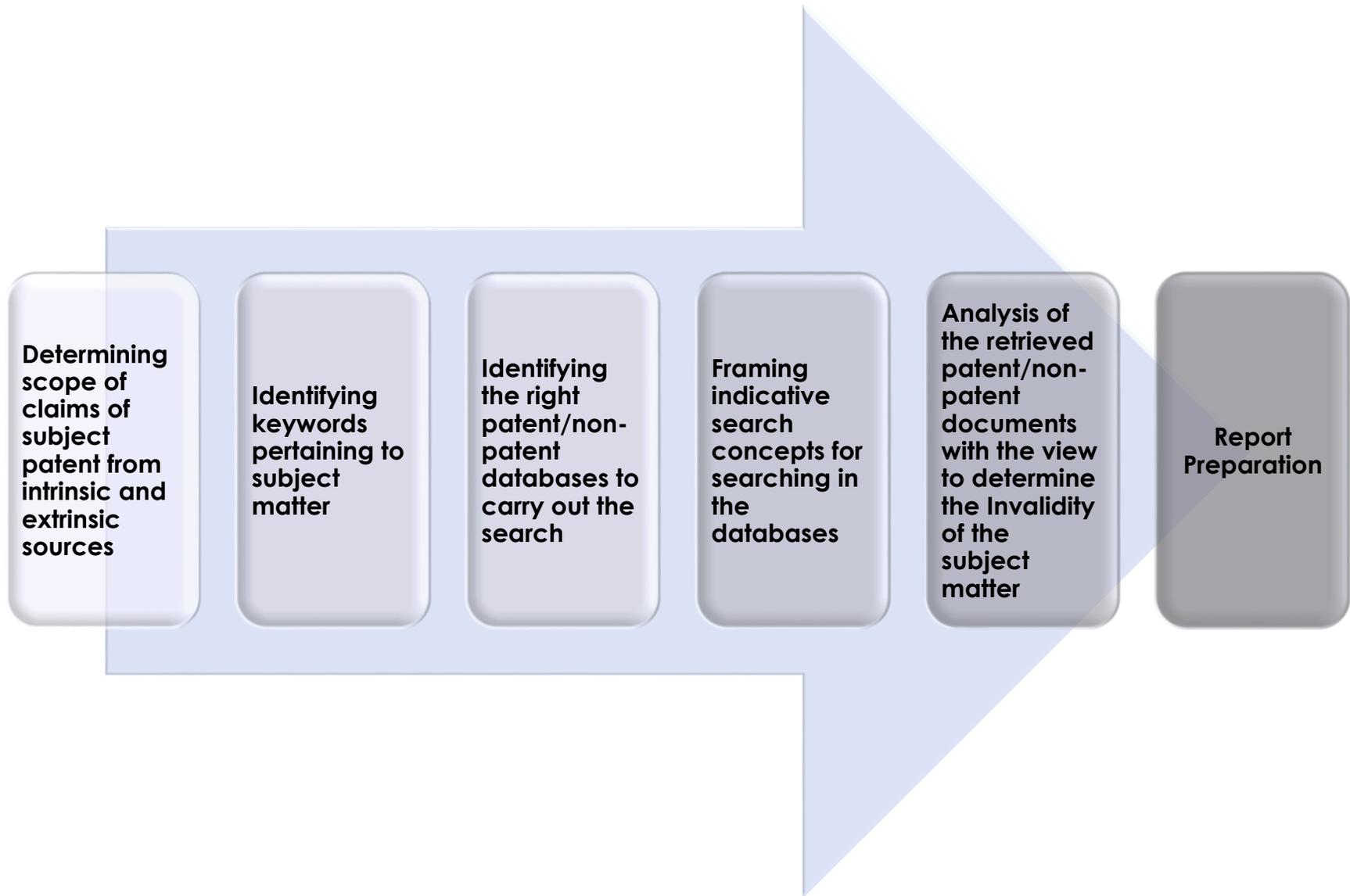
1.   OBJECTIVE OF SEARCH

Objective of this assignment is to find out prior art references for the elements as claimed in independent claim 1 by the United States patent **#6698021** titled *"System and method for remote control of surveillance devices"*. Prior art references published before the priority date of the patent i.e. **Oct 12, 1999**, are preferred to form part of the report

2.   UNDERSTANDING THE SUBJECT MATTER

The target patent relates to a video surveillance and monitoring system that stores video image data in a centralized off-site storage site. Video images captured by cameras located at client sites are forwarded to a centralized off-site server associated with centralized off-site storage site via a camera server. Video images received by the centralized off-site server are produced for live viewing and/or archived in an image database at centralized off-site storage. The centralized off-site server is coupled to a private network that enables communication with surveillance cameras/camera server corresponding to geographic sites and a public network that couples centralized off-site server to an off-site client.

As claimed in the first independent claim of the target patent, centralized off-site server initialize communications between the surveillance cameras and at least one off-site client workstation coupled to the public network. The client workstation cannot directly access the surveillance cameras/camera servers without an initialization by the centralized off-site server.

3.   SEARCH METHODOLOGY

Determining scope of claims of subject patent from intrinsic and extrinsic sources

Identifying keywords pertaining to subject matter

Identifying the right patent/non-patent databases to carry out the search

Framing indicative search concepts for searching in the databases

Analysis of the retrieved patent/non-patent documents with the view to determine the Invalidity of the subject matter

Report Preparation

4.   MAPPING SCORECARD

US 6,698,021 [Claimed Elements]	Result 1	Result 2	Result 3
1. **A video surveillance and monitoring system,** comprising:	✔	✔	✔
a private network that enables communication with surveillance cameras corresponding to geographic sites;	✔	✔	✔
wherein at least two surveillance cameras correspond to geographically distinct sites; and	✔	✔	✔
a centralized off-site control site, including at least one server, said at least one server being coupled to said private network and to a public network, said at least one server being operative to initialize communications between the surveillance cameras and at least one off-site client workstation coupled to said public network, to coordinate the retrieval of video images from all said surveillance cameras, to produce said retrieved video images as live images to the at least one off-site client workstation, and to enable off-site client workstations to effect real-control over selected surveillance cameras, wherein the off-site client workstation cannot initialize communication with the surveillance cameras.	✔	✔*	✔*

✔   *represents relevant text mapping*
✔*   *represents partial mapping with teaching/suggestion/motivation supported by the searcher's comments*
X   *represents element not available/identified in the prior art.*

5.   PRIOR ART REFERENCES – DETAILED ANALYSIS

Upon completion of this prior art search, three potentially relevant patents were found.

RESULT -1   BACK

Publication Number:	US20020147982A1		
Title:	Video security system		
Priority Date:	Jul 20, 1999	**Publication Date**	Oct 10, 2002
Inventor(s):	Surendra Naidoo | William Glasgow | Gregory Feldkamp		
Assignee(s)/ Applicant(s):	Comcast Cable Communications		

ABSTRACT

A video security system for the remote verification and monitoring of conditions surrounding an alarm signal. A security gateway at the monitored premises detects alarm conditions and transmits information and video relating to the alarm condition to personnel at a central monitoring station in substantially real time for verification. Various embodiments of the system transmit alarm information to the central monitoring station through hybrid-fiber coaxial, DSL, fiber-optic, high-speed fixed wireless and mobile communications networks. The security system may include secondary alarm notification from the security gateway to the central monitoring station via a second network, such as IP,

Ethernet, Internet, frame relay, public switched telephone, wireless, and mobile communications networks.

| Claimed Elements (US 6,698,021 B1)	Prior Art (US20020147982A1)
1. **A video surveillance and monitoring system,** comprising:	**[Abstract] A video security system for the remote verification and monitoring of conditions surrounding an alarm signal.** A security gateway at the monitored premises detects alarm conditions and transmits information **and video relating to the alarm condition to personnel at a central monitoring station in substantially real time for verification.**
a private network that enables communication with surveillance cameras corresponding to geographic sites;	**[Para 50]** FIG. 2 depicts an embodiment of the present invention where the security system server 131 and monitoring client 133 are located at two separate locations—namely, a data center 132 and a central monitoring station ("CMS") 136. **As shown, security gateway 115 is operatively coupled to data center 132 through network 120,** which is, in turn, operatively coupled to central monitoring station 136 through network 134.
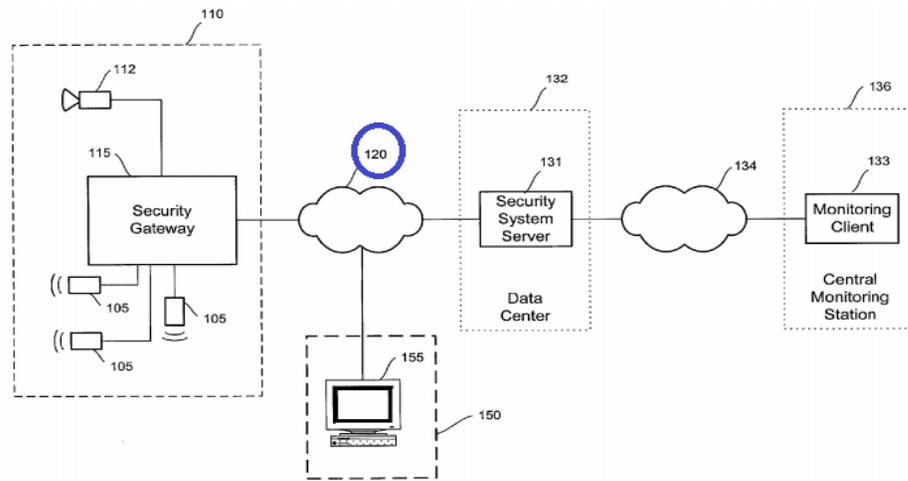
[Para 33] **In general, network 120 may be a public network or private network, a single network or a combination of several networks.** In most embodiments, network 120 may be, but is not required to be, an IP-based network. In some embodiments it may be desirable for all or a portion of network 120 to include publicly available networks, such as the Internet, to avoid the need for installing, purchasing, or leasing additional infrastructure.

wherein at least two surveillance cameras correspond to geographically distinct sites; and	**[Para 18]** In another broad respect, **the present invention is directed to a security system for providing security monitoring services for a plurality of users comprising a plurality of security gateways, each located at a premises, wherein each security gateway is operable to detect an alarm condition and to record video of at least a portion of its** <u>**respective premises**</u> **relating to the alarm condition, said video hereinafter referred to the Alarm Video** ………………………..

a centralized off-site control site, including at least one server, said at least one server being coupled to said private network and to a public network, said at least one server being operative to initialize communications between the surveillance cameras and at least one off-site client workstation coupled to said public network, to coordinate the retrieval of video images from all said surveillance cameras, to produce said retrieved video images as live images to the at least one off-site client workstation, and to enable off-site client workstations to effect real-control over selected surveillance cameras, wherein the off-site client workstation cannot initialize communication with the surveillance cameras.

[Para 31] FIG. 2 depicts an embodiment of the present invention where the security system server 131 and monitoring client 133 are located at two separate locations—namely, a data center 132 and a central monitoring station ("CMS") 136. As shown, security gateway 115 is operatively coupled to data center 132 through network 120, which is, in turn, operatively coupled to central monitoring station 136 through network 134. Any alarm notification and video information sent by security gateway 115 is transmitted to the security system server 131 at the data center 132.
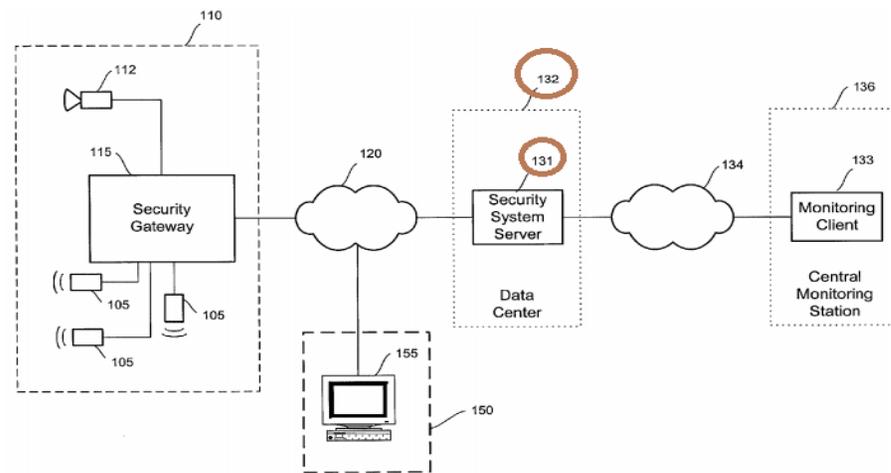
[Para 54] In the illustrative embodiment, communications between security gateway 115, data center 132, and CMS 136 occurs through a combination of public and private networks……………………

[Para 43] In addition, some embodiments of the present invention may include the functionality to allow access to security gateway 115 and security system server 131 using a

remote station 155 operatively coupled to security gateway 115 and security system server 131. **Remote user 155 must first be authenticated by security system server 131. It is noted that the present invention contemplates the use of any authentication techniques. Once authenticated, remote user may access some or all of the features of base station 115.** These features may include, without limitation, arming or disarming the security system; adjusting sensitivities of sensors (if present); adjusting alarm condition detection sensitivity; **remote surveillance; adjusting camera settings;** and reviewing alarms and recordings. These functions may also include remote surveillance, referred to as "lifestyle video."

[Para 44] **Remote user 155 may connect to security system server 131 and base station 115 (after authentication) through network 120.** Because a remote user does not necessarily need real-time access to alarm video, a low-bandwidth connection may be used to connect remote station 155 to security system server 131 and base station 115. **After authentication, security system server 131 may be configured to create a data connection between remote station 155 and security gateway 115 such that communications between remote station 155 and security gateway 115 bypass security system server 131..................**

Searcher's Summary

The prior art relates to a video security system for the remote verification and monitoring of conditions surrounding an alarm signal where plurality of video cameras are connected a security gateway which is operatively coupled to data center (off-site server) through a network 120, which is, in turn, operatively coupled to central monitoring station through network 134. Remote user is first authenticated by security system server and upon successful authentication, user is provided with rights to adjust camera settings and remote surveillance.

RESULT -2

Publication Number:	FR2707029A1
Title:	Method and system for event monitoring, which are applicable to remote surveillance installations
Priority Date:	Jun 23, 1993
Publication Date	Dec 30, 1994
Inventor(s):	Markezana Maurice | Perez Julien et. Al.
Assignee(s)/ Applicant(s):	Provence Alpes Corse Caisse

ABSTRACT

Method of event monitoring, for example applicable to remote surveillance installations including a procedure for removing doubt, characterized in that the information gathered on a surveyed site, by at least one sensor, is recorded continuously on a local memory-storage module including at least one recorder or endless recording apparatus equipped with a capacity for recording over a given duration (T) and to which this sensor is linked, the operation of this endless recorder being stopped by means of a timer after a short period of time (T2) less than the possible recording duration and subsequent to the transmission of an event by this sensor, the information recorded before the stopping of the said recorder then being automatically transmitted, by at least one transmitter, to a surveillance station.

Claimed Elements (US 6,698,021 B1)	Prior Art (FR2707029A1)

1. **A video surveillance and monitoring system,** comprising:	**[Page 6, Line 34-38; Page 7, Line 1-6]** According to this method and system, **the information collected on the monitored site, by one or more sensors, is recorded by a local storage module** comprising one or more recorders or endless recording devices having a capacity -7 recording on a given duration T and the operation of this recorder or any one or more of these recorders can be stopped, via a timer acting on a stop switch, after a short period of time TZ following your transmission of an event by this or these sensors, the information recorded by this or these devices during the duration T being then automatically transmitted by at least one transmitter to a central monitoring station. **The sensors of the event control system may be auditory (microphones) and / or visual (cameras) sensors.**
a private network that enables communication with surveillance cameras corresponding to geographic sites;	**[Page 8, Line 11-20] The alarm center is connected to the central telephone station via a transmitter, for example a telephone transmitter, and at least one transmission or communication network such as**, for example, a transmission network. , public switched telephone network, **private network**, Transpac system (packet transmission network), Numéris system, etc. It is also preferably connected to the surveillance P.C. by a second network or backup network constituted, for example, by a switched telephone network.
wherein at least two surveillance cameras correspond to geographically distinct sites; and	**[Page 8, Line 6-10] The control panel generally manages several zones or sites,** each zone having its own characteristics: this zone being, for example, in service and therefore monitored from 12:00 to 14:00 and from 18:00 to 08:00, while another zone is in permanent surveillance (self-protection).), etc.

a centralized off-site control site, including at least one server, said at least one server being coupled to said private network and to a public network, said at least one server being operative to initialize communications between the surveillance cameras and at least one off-site client workstation coupled to said public network, to coordinate the retrieval of video images from all said surveillance cameras, to produce said retrieved video images as live images to the at least one off-site client workstation, and to enable off-site client workstations to effect real-control over selected surveillance cameras, wherein the off-site client workstation cannot initialize communication with the surveillance cameras.	[Page 8, Line 11-20] The alarm center is connected to the central station via a transmitter, for example a telephone transmitter, and at least one transmission or communication network such as, for example, a transmission network. , public switched telephone network, private network, Transpac system (packet transmission network), Numéris system, etc. It is also preferably connected to the surveillance P.C. by a second network or backup network constituted, for example, by a switched telephone network.

Searcher's Summary

The prior art relates to a method of event monitoring applicable to remote surveillance installations including a procedure for removing doubt. In a preferred embodiment, alarm system located at a site captures data (sensor, video, audio) and transmits it to a central station. The central station is connected to alarm system using a private network and is connected to the surveillance P.C. by a second network or backup network.

RESULT -3

Publication Number:	CA2228679A1
Title:	Surveillance systems
Priority Date:	Feb 02, 1998
Publication Date	Aug 04, 1999
Inventor(s):	Murray Heggie | Thomas William Hickie
Assignee(s)/ Applicant(s):	Gridzero Technologies Inc

ABSTRACT

An on-line surveillance system for monitoring and recording activity at a remote location is described. Monitoring devices, such as cameras, are capable of continually surveying selected zones at the remote location, detecting activity such as motion, and providing an alarm to a monitoring station when motion is detected. Each camera's output is stored in dynamic memory such that activity occurring within a selected interval prior to initiation of an alarm is retained. Similarly, each camera's output recorded during the alarm period is stored in memory.

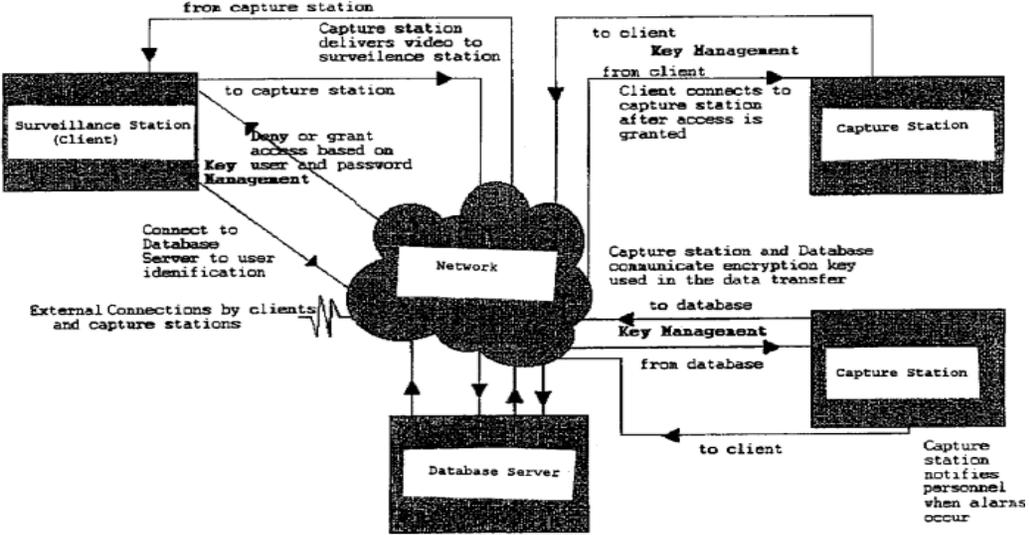| Claimed Elements (US 6,698,021 B1)	Prior Art (CA2228679A1)
1. **A video surveillance and monitoring system,** comprising:	**[Abstract] An on-line surveillance system for monitoring and recording activity at a remote location is described. Monitoring devices, such as cameras, are capable of continually surveying selected zones at the remote location, detecting activity such as**

	motion, and providing an alarm to a monitoring station when motion is detected.
a private network that enables communication with surveillance cameras corresponding to geographic sites;	**[Page 1, Line 1-6]** This invention relates to surveillance systems and more particularly to such systems employing cameras at a remote location with the camera output and any alarm conditions encoded and selectively reported to a monitoring station over a communications network.
wherein at least two surveillance cameras correspond to geographically distinct sites; and	**[Page 11, Line 16-24]** Once connected, many more actions are enabled on the management station than are enabled on the operator stations. Privileged users use the management stations and the following describes functionality of the management 20 station that is not inherited from the operator station. **In general, the management software can connect to multiple sites,** query the status of devices hosted at remote

	sites, monitor the state of remote sites and configure and control remote sites and the devices associated with them.
a centralized off-site control site, including at least one server, said at least one server being coupled to said private network and to a public network, said at least one server being operative to initialize communications between the surveillance cameras and at least one off-site client workstation coupled to said public network, to coordinate the retrieval of video images from all said surveillance cameras, to produce said retrieved video images as live images to the at least one off-site client workstation, and to enable off-site client workstations to effect real-control over selected surveillance cameras, wherein the off-site client workstation cannot initialize communication with the surveillance cameras.	**[Page 2, Line 32-34]** As shown in Figure 1 four separate (but interdependent) applications have been developed. These are remote or capture station, operator and/or management station also known as surveillance station, **and video database.** **[Page 3, Line 19-35]** The remote station listens for connection requests from clients who wish to monitor output from a camera that is hosted at that station. **When a connection request is received, the remote station determines whether the connection attempt is valid or invalid. If the connection attempt is determined to be valid, a Transmission Control Protocol (TCP) connection is opened to the connecting client and initialization data is sent to the client. This data consists of the list of those cameras hosted at the remote station that the connected client has access privileges for.** **If the connecting client is an ordinary user, the client can select cameras for viewing.** Once selected, output from the cameras is sent to the operator station. **If the connecting client is a privileged user, additional actions are available to the client.** **The server listens for incoming connections. When a connection request is detected, the server determines the validity of the request. If the request is accepted, the server opens a TCP channel to the client.** **[Page 4, Line 1-6]** The remote station maintains a database of users. When a connection request is made, **the client that issues the request must submit a username and password. If the username-password combination entered by the client is not in the**

	database, the connection attempt is rejected.
	[Page 11, Line 16-24] Once connected, many more actions are enabled on the management station than are enabled on the operator stations. **Privileged users use the management stations and the following describes functionality of the management 20 station that is not inherited from the operator station. In general, the management software can connect to multiple sites, query the status of devices hosted at remote sites, monitor the state of remote sites and configure and control remote sites and the devices associated with them.**

Searcher's Summary

The prior art relates to an on-line surveillance system for monitoring and recording activity at a remote location. The system comprises of remote or capture station, operator and/or management station also known as surveillance station, and video database/server. The management station/client requests the server to establish connection with remote or capture station. Upon successful authentication, the server grants permission to access/control remote or capture station. However, unlike target patent, all modules are connected using a single network.

6.   OTHER RELATED REFERENCES

Upon completion of this Patentability search 3 related patent disclosing different aspects of the clamed features were identified. **The references are arranged on the basis of their relevance with the subject matter.**

S No.	Bibliographic Details		Relevant Text
1	**Patent Number**	WO1999039505A1	**[Page 9]** In general, the present invention provides a means and method for networked-based monitoring and control of a site accessible via the Internet. The preferred embodiment can be connected to the Internet and a conventional alarm panel. **The system performs the control functions and makes monitoring information available to any authorized users on the Internet. For commercial users, the system is typically connected to a local LAN 116 and data packets are routed onto the Internet. For residential users, the system may connect directly to the Internet via a conventional Internet service provider (ISP), or users may connect to the Internet through central station 316,** which may act as an ISP using conventional methods.
	Priority Date	Jan 29, 1998	
	Publication Date	Jan 27, 1999	
	Title	Networked security system for network-based monitoring and control of an environment	

2	Patent Number	EP0781049A2	[Para 62] Fig. 2 is a drawing to show the software configuration of the present embodiment. **Software 410 of the monitoring terminal 60 and software 420 of plural video communication terminals 20 and the like is connected to the network 100, and installed in the software 410 of the monitoring terminal is camera control client 411 for remote-controlling cameras each connected to the software 420 of video communication terminals on the network,** video reception software 412 for expanding compressed video data sent in the form of packet from the video communication terminal and displaying the expanded
	Priority Date	Dec 19, 1995	
	Publication Date	Jun 25, 1997	

	Title	Communication apparatus, image processing apparatus, communication method, and image processing method	data, and map management software 413 having a GUI capable of graphically displaying a map, a camera symbol, positions of cameras by scope display of Fig. 6 as detailed hereinafter, and pan and zoom and performing camera control. FIG. 2
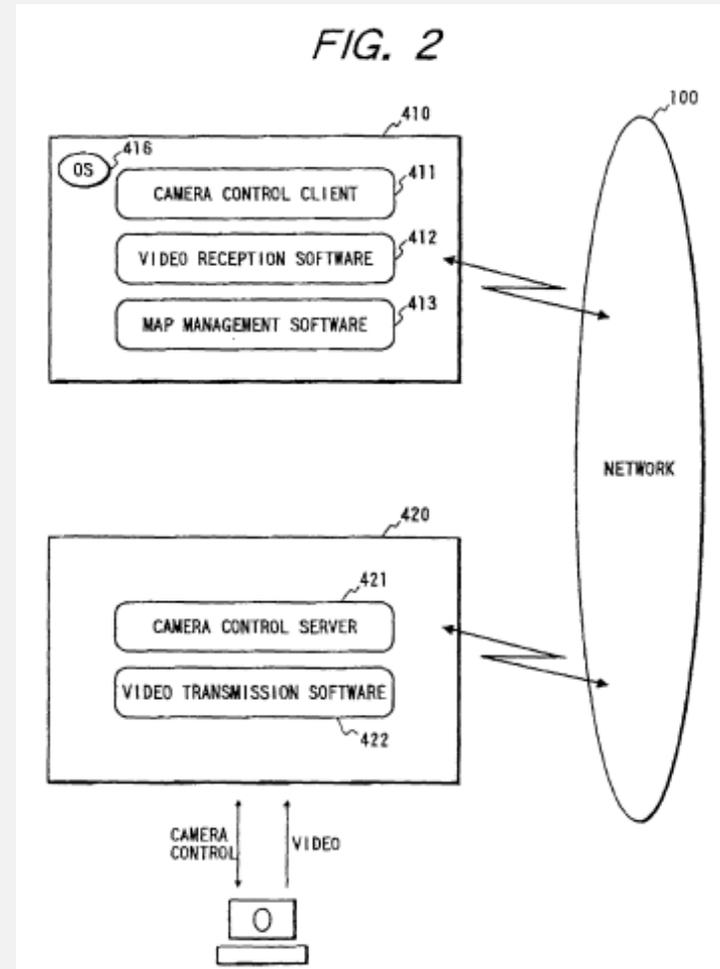
APPENDIX

7. DATABASES USED

The search was conducted in the following databases:

Patent Databases	Thomson Innovation | Orbit | Google Patents | Espacenet | WIPO | JPO | FREE PATENT ONLINE | DEPATISNET | CIPO | SIPO
Non-Patent Databases	Google | IEEE | SCIENCE DIRECT | CiteSeerX

8. KEYWORDS

One or more of the key words listed below have been used in different combinations while conducting the prior art search

Keywords	Technical Synonyms
Video Surveillance	Monitoring | Security | Inspection | Supervision | Spying | CCTV | Closed Circuit Camera | Observer | Scanner | Videography
Location	Position | Geographic | Area | Region | Place | Site | Point | Venue | Building | Spot | Premises | Office
Camera	Imaging Device | Video Device | Image Capture | Image Acquisition | Camcorder | CCTV | Closed Circuit | Imaging | Picturing | Filming
Network	Private Network | Public Network | Wide Area | Local Area |LAN | WAN | MAN | Telecommunication | Internet | VPN | Virtual Private | Web |

Server	Remote Database | Internet | Web-based | Application | Network Device | Proxy
Centralized	Remote | Off-site | Consolidated | Common | Universal
Client	User |Monitor | PC | Computer | Operator | Viewer
Initialize	Start | Request | Commence | Launch | Establish | Set-off | Trigger | Actuate | Activate
Receive/Transmit	Transceiver | Reception | Transfer | Pass | Communicate | Circulate | Relay | Download | Upload | Extract | Fetch
Control	Setting | PTZ | Pan-tilt-zoom | Angle | Focus | Distance | On-off| Timer
Display	Present | View | Show | Exhibit | Lay-out

9.   SEARCH CONCEPTS

Following search concepts/strategies were identified and were used to search on different databases using combination of class/keyword/active assignee/inventors in the domain

1	Off-site storage of video surveillance data
2	Camera server connected to private and public network
3	Distributed control for remote monitoring in video surveillance
4	Secure remote camera access by client device

5	Secure storage of video surveillance data over private network

10. FIELD OF SEARCH

Following class codes were used alone and/or in combination with other class codes/keywords

IPC/CPC Classification	
G08B13/00	Physics : Signalling Or Calling Systems; Order Telegraphs; Alarm Systems : Burglar, Theft Or Intruder Alarms
• G08B13/194	using image scanning and comparing systems
• G08B13/196	using television cameras
• G08B13/19656	Network used to communicate with a camera, e.g. WAN, LAN, Internet
• G08B13/19678	User interface
• G08B13/19689	Remote control of cameras, e.g. remote orientation or image zooming control for a PTZ camera
H04N7/00	Electricity : Electric Communication Technique : Pictorial Communication, E.G. Television : Television Systems
• H04N7/18	Closed circuit television systems
• H04N7/181	for receiving images from a plurality of remote sources

11. DISCLAIMER

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