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U.S. Patent 8,558,888

The '888 patent ("*Third Iris*") has a priority date of February 27, 2007 and describes a port of recordation terminal (PORT) that is used to capture, transform, cache, and upload images from a remote point to a network service over a low bandwidth and unreliable connection. However, this type of system was known in the art and disclosed by the references shown below.

U.S. Patent Publication U.S. 2006/0179463 ("*IVC*") has a priority date of February 7, 2005 and discloses a remote surveillance system. This patent anticipates that portions of the video can be transmitted to reduce bandwidth, and that the system must be able to communicate using a low-bandwidth communication channel.

U.S. Patent 7,123,166 ("*Haynes*") has a priority date of November 17, 2000 and discloses a method for managing a parking lot. Specifically, this patent anticipates event-based video capture and discusses transmitting the content via https.

Japanese Patent JP4767729 ("*Mitsubishi*") has a priority date of March 16, 2006 and discloses a surveillance system that uses storage devices to maintain event data. Specifically, this patent anticipates storing the video stream locally until a successful transmission has been made.

A sample claim chart comparing the *Iris* patent to the *IVC, Haynes*, and *Mitsubishi* patent is provided below.

US 8,558,888 ("*Third Iris*")	US 2006/0179463 ("*IVC*") US 7,123,166 B1 ("*Haynes*") JP 4,767,729 B2 ("*Mitsubishi*")
[1.a] A method for operating an **apparatus** for to reliably maintain high complexity continuous data over a low bandwidth and unreliable connection, the **apparatus** comprising: a **point of recordation terminal** (PORT) **coupled to a connection**, the method comprising **capturing**, and transmitting, an event of interest,	"An **apparatus** comprising a local processor, **one or more input ports to receive an input audio-visual data signal** to be processed by the local processor, **one or more ports to communicate processed audio-visual data and control information to a central processor** located remotely from the local processor" *IVC* at Claim 17. "The apparatus of claim 17 also including an **audio-visual capture device** to produce the input audio-visual data signal" *IVC* at Claim 19.

[1.b] wherein **capturing an event of interest** comprises the following processes: **determining when an event of interest** occurs;	"As shown in FIG. 9, the alarm manager 72 monitors hardware digital inputs (DIs) 150 and also virtual digital inputs (VDIs) 152. **When an alarm condition is detected, a video clip containing images from before, during, and after the event is generated from data in the alarm video** FIFOs 154 and is saved as a disk file. An alarm message is queued 158 for the VCC indicating that this file should be uploaded." *IVC* at [0096] "The method of claim 1 also including at the remote location, **determining an event condition**" *IVC* at Claim 25 "The method of claim 1, further comprising: transmitting information regarding a **parking lot event**." *Haynes* at Claim 28 "As yet another example, **an interaction device** can learn to **recognize, characterize, and/or report certain parking lot objects and/or events**, such as the occurrence of rain, hail, snow, frost, an object left on a roof of a car without being secured, a driver's face, etc." *Haynes* at 11:18 "A wide range of parking lot data and/or information can be **detected**, recognized, stored, and/or reported by video input device 1420, video interaction device 1400, and/or another interaction device. Parking lot data and/or information can include, for example, **any of the following events: a vehicle colliding with another vehicle, a person, a parking impediment, and/or driving impediment;" . . . " a fire; and/or weather events such as precipitation; flooding; hail; icing; ice patches; and/or snow accumulation**. Moreover, video-based parking lot information can be combined with information from other sources to **infer or deduce various events**." *Haynes* at 15:9 "As another example, audio data and/or information can be utilized by system 1 to **recognize events** in parking lot 1320, building 1120, and/or nearby areas." *Haynes* at 18:13

[1.c] selecting an **extent of data associated with the event of interest**; **efficiently recording the selected extent of data**; deriving a **compact representation of the event of interest**;	"A method comprising at a remote location, receiving audio-visual data, **identifying an event** at the remote location, **storing a brief segment of the audio-visual data associated with the event, including audio-visual data that was received prior to the event**, and communicating the brief segment of the audio-visual data to a central processor at a central location . . ." *IVC* at Claim 20 "The bitmap stream is delivered from the time stamper output to the **compression module** 114. A variety of **compression algorithms could be used**. Some implementations use the Microsoft Windows Media 9 compression algorithm that is similar to MPEG4." *IVC* at [0010] "The output of this module is a series of 'K' and 'I' frames (also known as 'key' and 'delta' frames). **The 'K' frame contains the entire image in a highly compressed format. The 'I' frames contain incremental changes to the image that are also highly compressed.** Because only the changes to the image are included in the I frames and because in general most of the image will be quite stable, the reduction in space required to store the stream of images is extremely high (on the order of 97+percent). The compression settings are user settable. One important setting is the 'bit rate'. **This setting instructs the compression algorithm to deliver the best image possible while not exceeding the specified bit rate.** This can be set quite high for images stored to a local disk or can be set quite low for images to be delivered over the low bandwidth communications network. In the case of the DVR stream, this value is typically set high. When this type of compression is used, it is critical that no frames are missed. This is because each 'I' frame builds upon the summed total result of all previous I frames back to the last K frame. For example one could deliver large numbers by sending the initial value 12345678 followed by shorter incremental (I) values; +101, −42, +316, −29 etc. It can be seen that if any of the values is missed then all subsequent values will be wrong. It is vital that the system detect and correct for any lost I frames." *IVC* at [0078]

	"In the monitoring system according to the present invention, during normal times when no event occurs at the monitoring destination, the video shot by the monitoring camera installed at the monitoring destination is stored as a pre-event video in the primary storage video database, and the event at the monitoring destination **When the event occurs, the live video of the surveillance camera corresponding to the event is stored in the stored video database** with the post-event playback time specified as the post-event video." *Mitsubishi* at 5:40 "**When an event such as an accident, disaster, crime, etc. occurs at the monitoring destination** without requiring a storage device to be stored, **the stored images before and after the occurrence of the event can be confirmed**." *Mitsubishi* at 6:13
[1.d] and **storing the recorded events**	"Each [Remote Video Engine] RVE gathers data from one or more cameras 28, 30 and alarm sensors (not shown). The gathered data includes, for example, one or more of the following: **(a) high quality continuous Digital Video Recorder (DVR) files that are stored on a local disk storage device 21, 23 on the RVE**; (b) medium quality video alarm clips that capture events just before, during, and after an alarm and are stored on the local disk; (c) low quality live streaming video that stream through the existing factory network" *IVC* at [0025] "Memory 3200 can be any well-known device capable of **storing analog and/or digital data and/or information**, including, for example, a hard disk, Random Access Memory (RAM), Read Only Memory (ROM), flash memory, a compact disk, a magnetic tape, a floppy disk, and any combination thereof." *Haynes* at 16:8 "Because of the ability of system 1 to recognize objects, vehicles, people, and/or animals, even **more specific events can be recognized, stored, and/or reported** including, for example, the arrival and/or position of an identified person, animal, vehicle, and/or object." *Haynes* at 16:8

	"The **event** generation devices E1 to En are means for generating predetermined event data and **transmitting the generated event data to the video storage** and distribution device 1 **when an event occurs** based on a preset condition at each monitoring destination of the monitoring cameras C1 to Cn." *Mitsubishi* at 6:46
[1.e] wherein transmitting an event of interest comprises the following processes: **transmitting immediately when directed** and	"The method of claim 1 in which the processed audio-visual data is communicated as **live audio-visual on demand data**." *IVC* at Claim 4 "The user interface can allow a user to **select** a parking lot object **to obtain data and/or information about that object, including, for example, live**, delayed, and/or time-lapsed video data and/or information about that object." *Haynes* at 10:48
[1.f] **storing if immediate transmission fails**;	"A method comprising at a remote location, receiving audio-visual data, identifying an event at the remote location, **storing a brief segment of the audio-visual data associated with the event, including audio-visual data that was received prior to the event**, and communicating the brief segment of the audio-visual data to a central processor at a central location.." *IVC* at Claim 20 "A method of operating a **video file server** having a **cached disk storage subsystem**, said cached disk storage subsystem having disk storage and a random access cache memory and responding to prefetch commands for **staging data** specified by respective processes from the disk storage **to an allocated portion of the cache memory** when the specified data are absent from the cache memory, said cached disk storage subsystem responding to fetch commands from the respective processes for fetching the specified data from the cache memory, wherein a plurality of the processes share access to data in the allocated portion of the cache memory" *EMC* at Claim 6

	"(6) Monitoring terminals T1 to Tm As shown in FIG. 15, the monitoring terminal Ty (1 ≦ y ≦ m) includes a request transmission / reception unit 600, a video reception unit 601, a video decoding unit 602, a display unit 603, an event list management unit 604, and an event DB (event database). 605. (6-1) Detailed Operation when Receiving and Reproducing Live Video after Event Generation When the request transmission / reception unit 600 receives an event data generation notification from the video storage / delivery device 1, the request transmission / reception unit 600 notifies the event list management unit 604, **When the current monitoring video (live video) can be played back, a receivable response is received. When the video cannot be played back, for example, when a video in which another event has already occurred is played back, it cannot be received. The response is transmitted to the video storage / delivery device 1**. In these receivable responses and unreceivable responses, an event ID and a flag indicating receivable / impossible are stored. Further, the event list management unit 604 accumulates the received event data occurrence notification data in the event list of the event DB 605. The configuration of the event DB 605 is the same as the event DB 451 of the video storage / delivery device 1." *Mitsubishi* at 16:21 **When the request transmission** / reception unit 600 **receives a video reception permission for the transmitted receivable response from the video storage / delivery device 1, the request transmission / reception unit 600 activates the threads of the video reception unit** 601, the video decoding unit 602, and the display unit 603, and multicasts The address and port number are notified, and the video decoding unit 602 is notified of the profile level ID and DCI which are video attribute information. **When the video reception unit 601 starts reception and receives the RTP packet of the live video given from the concentrator 3 via the network 5, after correcting the arrival order by performing buffering for a certain period of time**, The time stamp of the RTP packet and the video code data stored in the RTP payload are input to the video decoding unit 602. The video decoding unit 602 decodes the video data, and transmits the RTP time stamp information and the corresponding

	decoded video to the display unit 603. **The display unit 603 reproduces and displays live video in accordance with the timing of the RTP time stamp."** *Mitsubishi* at 16:35
[1.g] opening an **https** client session; opening an **https** server session; **connecting between an https client and server**;	"Video input device 1420 and/or video interaction device 1400 can output analog and/or digital video data in a signal sent to system interaction device 1700, which can be located, for example, inside building 1120. One or more video interaction devices 1400 **can process the output of video input device** 1420, and can be used, for example, to filter, transform, enhance, interpret, recognize, compress, and/or **encrypt** the video data output." *Haynes* at 2:56 "**Data and/or information can be exchanged between interaction devices via any well-known data communication protocol**, including TCP/IP, HTTP, **HTTPS**, and/or WAP" *Haynes* at 9:40 **"Network 1750 can have any architecture, including a direct connection, a local area network, a wide area network such as the public switched telephone network and/or the Internet**, and/or a combination thereof. Network 1750 can be a packet-switched, a circuit-switched, a connectionless, or connection-oriented network or interconnected networks, or any combination thereof. Network 1750 can be oriented toward voice, data, or voice and data communications. Moreover, a transmission media of network 1750 can take any form, including wireline, satellite, wireless, or a combination thereof." *Haynes* at 6:22 "One or more parking interaction devices 1300 can exchange data, or data that has been processed into information, with system interaction device 1700. To do so, each parking interaction device 1300 can connect via parking **wireless network interface** (shown in FIG. 3) through wireless network 1750 to system interaction device wireless network interface (shown in FIG. 3) connected to system interaction device 1700. In another embodiment, parking interaction device 1300 can connect

	via parking wireless network interface (shown in FIG. 3) to an alternative wireless network (not shown) connected to system interaction device 1700 that operates at a different frequency than network 1750. Moreover, any or all of parking interaction devices 1300 can connect to system interaction device 1700 via any of many well-known wireline transmission methods. For example, any or all of parking interaction devices 1300 can connect via a building network interface (not shown) to a wireline network (not shown), such as **Ethernet**, connected to a system interaction device wireline network interface (not shown) that is connected to system interaction device 1700" *Haynes* at 8:22
[1.h] transmitting with link level encryption;	"Video input device 1420 and/or video interaction device 1400 can output analog and/or digital video data in a signal sent to system interaction device 1700, which can be located, for example, inside building 1120. One or more video interaction devices 1400 **can process the output of video input device** 1420, and can be used, for example, to filter, transform, enhance, interpret, recognize, compress, and/or **encrypt** the video data output." *Haynes* at 2:56 "As an illustrative example, system interaction device 1700 can grant to a vehicle interaction device 1500 a subscription to parking lot information by providing a **decryption** key by which the subscribing vehicle interaction device 1500 can **decrypt** the parking lot information and thereby "see" a map of parking lot 1320." *Haynes* at 12:65 "The method of claim 9 in which the [Programmable Logic Controller] PLC protocol comprises one or more of ROC native, BSAP, and DF1 Radio Modem Protocol, DNP, UCA, IEC-61850, IEC-60870, GESNP, TIway, and Profibus-DP." *IVC* at Claim 11
[1.i] storing recorded events of interest locally; and	"A method comprising at a remote location, receiving audio-visual data, identifying an event at the remote location, **storing a brief segment of the audio-visual data associated with the event, including audio-visual**

transmitting when an **acceptable amount of bandwidth** becomes available.	**data that was received prior to the event**, and communicating the brief segment of the audio-visual data to a central processor at a central location..” *IVC* at Claim 20 “one or more ports to communicate processed audio-visual data and control information to a central processor located remotely from the local processor, and stored instructions to cause the local processor to **act as a programmable logic controller with respect to communication** with the central processor.” *IVC* at Claim 17 “The apparatus of claim 17 in which the processed audio-visual data is **communicated on a low-bandwidth communication channel** that is part of a low speed plant network.” *IVC* at Claim 18 “In general, in another aspect, the processed audio-visual data is communicated to a central processor at a central location using a **communication channel at a rate that is selectable to accommodate characteristics of the communication channel**.” *IVC* at [0010]