UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
SHERMAN DIVISION

STELLAR, LLC, Plaintiff, v. MOTOROLA SOLUTIONS, INC., and WATCHGUARD VIDEO, INC. Defendants.	Civil Action No. 4:23-cv-750-SDJ

DEFENDANTS' P.R. 3-3 AND 3-4 DISCLOSURES

TABLE OF CONTENTS

Page

I. INTRODUCTION 1

II. PLAINTIFF'S DEFICIENT INFRINGEMENT CONTENTIONS & DISCOVERY RESPONSES 1

III. P.R. 3-3 DISCLOSURES AND CONTENTIONS 2

A. P.R. 3-3(a) Disclosures: Identification of Items of Prior Art That Anticipate and/or Render Obvious Asserted Claims 3

1. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914 3

2. Group 2: U.S. Patent No. 8,310,540 53

3. Group 3: U.S. Patent No. 8,928,752 61

4. Group 4: U.S. Patent Nos. 10,523,901 and 10,965,910 69

B. P.R. 3-3(b) Disclosures: Each Item of Prior Art that Anticipates and/or Renders Obvious the Asserted Claim, and Obviousness Combinations and Motivations to Combine 78

1. Background and State of the Art 81

2. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914 114

a. Exemplary Combinations 114

b. References Disclosing Wireless Transmission of Files to a Remote Memory 118

c. References Disclosing Remote Memory on Mobile Phone 134

d. References Disclosing Treating a Circular buffer as a Single File 148

e. References Disclosing Indexing Write-Protected Portions as a Second Distinct File in the Circular Buffer 162

f. Motivations to Combine 184

3. Group 2: U.S. Patent No. 8,310,540 189

a. Exemplary Combinations 189

b. References Disclosing Memory Loop as a Single File 191

c. References Disclosing Allowing Editing of Imaged Data in Memory Loop 191

d. Motivations to Combine 211

4. Group 3: U.S. Patent No. 8,928,752 215

PATENT OWNER
Ex 2004

TABLE OF CONTENTS
continued

Page

a. Exemplary Combinations 215

b. References Disclosing Increasing Duration of Protected Segment 216

c. Motivations to Combine 222

5. Group 4: U.S. Patent Nos. 10,523,901 And 10,965,910 226

a. Exemplary Combinations 226

b. References Disclosing A Pair of Eyeglasses Having a Sensor that Captures Senor Data 228

c. References Disclosing Contiguously Continuing to Record, Excluding from Overwriting, and Automatically Overwriting if not Designated for Saving 261

d. Motivations to Combine 262

C. P.R. 3-3(c) Disclosures: Charts Identifying Where in Each Item of Prior Art Each Element of the Asserted Claim Is Found 267

D. P.R. 3-3(d) Disclosures: Invalidity Under 35 U.S.C. § 112 267

1. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914 271

2. Group 2: U.S. Patent No. 8,310,540 276

3. Group 3: U.S. Patent No. 8,928,752 278

4. Group 4: U.S. Patent Nos. 10,523,901 and 10,965,910 280

IV. P.R. 3-4 DISCLOSURES AND CONTENTIONS 283

A. P.R. 3-4(a) Disclosures 283

B. P.R. 3-4(b) Disclosures 283

V. RESERVATIONS 284

A. General Reservations 284

B. Ongoing Discovery and Disclosures 285

C. Claim Construction 286

D. Plaintiff's Infringement Contentions 287

E. Effective Dates 288

F. The Intrinsic Record 288

G. Rebuttal Evidence 289

H. Contextual Evidence 289

I. No Patentable Weight 290

I. INTRODUCTION

Pursuant to P.R. 3-3 and 3-4 and the Order Governing Proceedings (ECF No. 13), Defendants Motorola Solutions, Inc. ("MSI") and WatchGuard Video, Inc. (WatchGuard") (collectively, "Defendants"), hereby provide Plaintiff Stellar, LLC ("Plaintiff," or "Stellar") with its P.R. 3-3 and 3-4 disclosures ("Invalidity Contentions") with respect to the following claims identified in Stellar's P.R. 3-1 and 3-2 Disclosures ("Infringement Contentions"):

- U.S. Patent No. 7,593,034 ("the '034 patent"): claims 1, 7 and 12;
- U.S. Patent No. 8,310,540 ("the '540 patent"): claim 1;
- U.S. Patent No. 8,692,882 ("the '882 patent"): claims 12, 21, and 22;
- U.S. Patent No. 8,928,752 ("the '752 patent"): claim 1;
- U.S. Patent No. 9,485,471 ("the '471 patent"): claims 1, 2, and 3;
- U.S. Patent No. 9,912,914 ("the '914 patent): claim 1;
- U.S. Patent No. 10,523,901 (the '901 patent): claim 1; and
- U.S. Patent No. 10,965,910 (the '910 patent): claim 1 (collectively "Asserted Claims").

II. PLAINTIFF'S DEFICIENT INFRINGEMENT CONTENTIONS & DISCOVERY RESPONSES

Plaintiff's Infringement Contentions are deficient in many respects as detailed in Defendants' January 19, 2024 email. Plaintiff amended its Contentions but they remain deficient. Additionally, Plaintiff's responses to Defendants' first set of interrogatories are deficient in many respects as detailed in Defendants' January 25, 2024 letter. Plaintiff supplemented its interrogatory responses but they remain deficient. Further, Plaintiff's responses to Defendants' second set of interrogatories are deficient and provide no substance. Should Plaintiff be permitted to further amend its Infringement Contentions or interrogatory responses, these Invalidity Contentions may

PATENT OWNER
Ex 2004

change and Defendants reserve the right to amend or supplement these Invalidity Contentions. Defendants contend that each of the Asserted Claims is invalid under at least 35 U.S.C. §§ 101, 102, 103, and/or 112.[1]

Additionally, Plaintiff is precluded from asserting any theory under the doctrine of equivalents that would ensnare any of the prior art references disclosed in Defendants' Invalidity Contentions and accompanying claim charts.

III. P.R. 3-3 DISCLOSURES AND CONTENTIONS

Exhibits A-1 through M-4 include claim charts of prior art references that, alone and/or in combination with the knowledge of a person of ordinary skill in the art, what was already known in the art, or other references disclosed herein, render the Asserted Claims of the Asserted Patents invalid under §§ 102 and/or 103, and this cover pleading further includes secondary references (Sections III.B.2 – 5, III.A.1) that would have been obvious to combine with the charted prior art references and motivations for making such combinations.

---

[1] The '034, '540, '882, '752, '471, '914, '901 and '910 patents are collectively referred to herein as the "Asserted Patents." All Asserted Patents have alleged priority dates prior to March 16, 2013. Accordingly, all references to 35 U.S.C. §102 refer to the pre-AIA version of that statute defining prior art.

Defendants reserve all rights with respect to subject matter ineligibility of the Asserted Claims of the Asserted Patents under 35 U.S.C. § 101 without any waiver hereof. *See Biscotti Inc. v. Microsoft Corp*., 2017 WL 2267283 (E.D. Tex. May 24, 2017) ("[U]nlike other districts' Patent Rules, this district's Patent Rules do not require a party to disclose an invalidity ground related to subject matter ineligibility under § 101."); *Maxwell, Ltd v. Apple Inc*., 2021 WL 3021253 at *5 (E.D. Tex. Feb. 26, 2021) ("[T]he Local Patent Rules of this district do not contain" the requirement to provide a "detailed explanation of any grounds of invalidity under § 101" in a party's invalidity contentions.).

PATENT OWNER
Ex 2004

A. P.R. 3-3(a) Disclosures: Identification of Items of Prior Art That Anticipate and/or Render Obvious Asserted Claims

Subject to Defendants' reservation of rights, Defendants contend that the following prior art patents, printed publications, and systems, alone and/or in combination, anticipate and/or render obvious the Asserted Claims of the Asserted Patents.

Discovery is ongoing, and Defendants' prior art investigation and third party discovery are therefore not yet complete. Accordingly, Defendants reserve the right to present additional items of prior art under 35 U.S.C. § 102(a), (b), (e), (f) and/or (g), and/or § 103 located during the course of discovery or further investigation. For example, Defendants expect to issue subpoenas to third parties believed to have knowledge, documentation, and/or additional prior art. These third parties include, without limitation, the authors, inventors, developers, or assignees of the prior art identified these disclosures. In addition, Defendants reserve the right to assert invalidity under 35 U.S.C. §§ 102(c) or (d) to the extent that discovery or further investigation yields information forming the basis for such invalidity.

1. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914[2]

Defendants disclose the following prior art that anticipates and/or renders obvious claims 1, 7 and 12 of the '034 patent; claims 12, 21, and 22 of the '882 patent; claims 1, 2, and 3 of the '471 patent; and claim 1 of the '914 patent (collectively "Group 1 Asserted Claims"):

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 7,348,895 ("Lagassey")	USA	Mar. 25, 2008 (filed Nov. 3, 2005).
U.S. 6,167,186 ("Kawasaki")	USA	Dec. 26, 2000 (filed Nov. 5, 1997)

[2] Given the overlap in claim limitations between the '034 patent, '882 patent, '471 patent and '914 patent, and to avoid unnecessary repetition, asserted claims for these patents are addressed and charted together.

PATENT OWNER
Ex 2004

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 6,624,611 ("Kirmuss"); provisional 60/335,943	USA	Sept. 23, 2003 (filed Aug. 9, 2002); provisional 60/335,943 (filed Oct. 30, 2001)
US 2007/0217761 ("Chen")	USA	Sept. 20, 2007 (filed Mar. 7, 2006)
U.S. 5,982,418 ("Ely")	USA	Nov. 9, 1999 (filed Apr. 22, 1996)
U.S. 6,804,638 ("Fielder")	USA	Feb. 27, 2003 (filed Jun. 20, 2001)
U.S. 10,878,646 ("Plante")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)
US20060077256 ("Silvernail"); provisional 60/709,11	USA	Apr. 13, 2006 (filed Nov. 29, 2005); provisional 60/709,11 (filed Aug. 18, 2005)
U.S. 8,081,214; provisional 60/617,988; US20060158968; WO2006/044476; PCT/US05/36701 ("Vanman")	USA	Jul. 20, 2006 / Apr. 27, 2006 (WO2006/044476) (filed Oct. 12, 2005); provisional 60/617,988 (filed Oct. 12, 2004)
U.S. 7,158,167 ("Yerazunis")	USA	Jan. 2, 2007 (filed Sept. 9, 1998)
U.S. 8,965,175 ("Fiore"); provisional 60/282,162; U.S. 2002/0191952	USA	Dec. 19, 2002 (filed Apr. 9, 2002); provisional 60/282,162 (filed Apr. 9, 2001)
US 2004/0033058 ("Reich"); provisional 60/403,553; provisional 60/409,236; provisional 60/461,674; provisional 60/474.269	USA	Feb. 19, 2004 (filed Aug. 13, 2003); provisional 60/403,553 (filed Aug. 14, 2002); provisional 60/409,236 (filed Sep. 9, 2002); provisional 60/461,674 (filed Apr. 10, 2003); provisional 60/474.269 (filed May 29, 2003)
U.S. 6,163,338 ("Johnson")	USA	Dec. 19, 2000 (filed Aug. 7, 1998)
EP1064783 ("Mann") / WO99/049656 / U.S. 6,307,526	Europe/PCT/USA	Sept. 30, 1999 (filed Mar. 25, 1998)
U.S. 5,523,799 ("Hattori")	USA	Jun. 4, 1996 (filed Jul. 13, 1994)
U.S. 5,996,023 ("Winter")	USA	Nov. 30, 1999 (filed Apr. 29, 1998)
U.S. 2003/0151663 ("Lorenzetti")	USA	Aug. 14, 2003 (filed Jan. 23, 2002)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 2002/0131768 ("Gammenthaler 1")	USA	Sept. 19, 2002 (filed Mar. 19, 2001)
U.S. 2004/0201765 ("Gammenthaler 2")	USA	Oct. 14, 2004 (filed Jan. 23, 2002)
U.S. 8,350,907 ("Blanco")	USA	Jan. 8, 2013 (filed Sep. 12, 2003)
U.S. 2004/0008255 ("Lewellen")	USA	Jan. 15, 2004 (filed Jul. 11, 2002)
U.S. 2005/0078195 ("Van Wagner")	USA	Apr. 14, 2005 (filed Oct. 13, 2004)
U.S. 6,995,668 ("Junqua")	USA	Dec. 9, 2004 (filed Jul. 7, 2004)
U.S. 2001/0005217 ("Hamilton")	USA	Jun. 28, 2001 (filed Jan. 10, 2001)
WO2004/036926 ("Pearlson")	PCT/USA	Apr. 29, 2004 (filed Oct. 17, 2003)
U.S. 6,690,294 ("Zierden")	USA	Feb. 10, 2004 (filed Jul. 10, 2001)
U.S. 6,831,556 ("Boykin")	USA	Dec. 14, 2004 (filed May 16, 2001)
U.S. 6,578,070 ("Weaver")	USA	Jun. 10, 2003 (filed Jul. 13, 1999)
U.S. 5,465,120 ("Schultheiss")	USA	Nov. 7, 1995 (filed Feb. 7, 1994)
U.S. Pat. No. 5,845,240; provisional 60/001,402 ("Fielder '240")	USA	Dec. 1, 1998 (filed Jul. 24, 1996); provisional 60/001,402 (filed Jul. 24, 1995)
U.S. 4,516,157 ("Campbell")	USA	May 7, 1985 (filed Oct. 27, 1983)
U.S. 6,614,408 ("Mann")	USA	Sep. 2, 2003 (filed Mar. 25, 1999)
U.S. 8,482,488 ("Jannard")	USA	Jun. 22, 2006 (filed Dec. 22, 2004)
U.S. 6,563,532; provisional 60/114,808 ("Strub")	USA	May 13, 2003 (filed Apr. 21, 2000); provisional 60/114,808 (filed Jan. 5, 1999)
U.S. 6,349,001; provisional 60/064,430 ("Spitzer")	USA	Feb. 19, 2002 (filed Jan. 11, 2000); provisional 60/064,430 (filed on Oct. 30, 1997)
U.S. 7,806,525; provisional 60/509,631; provisional 60/527.565; provisional 60,562 798; provisional 60/583,169; provisional 60/592,045;	USA	Feb. 8, 2007 (filed Oct. 11, 2006); provisional 60/509,631 (filed on Oct. 9, 2003); provisional 60/527,565 (filed on Dec. 8, 2003); provisional

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
provisional 60/605,191; provisional 60/462.591; provisional 60/618,107; provisional 60/620.238; provisional 60/647.836; provisional 60/647,826; provisional 0/725,896; provisional 60/725,999; provisional 60/787,850; provisional 60/846,150 ("Howell")		60,562 798 (filed on Apr. 15, 2004); provisional 60/583,169 (filed on Jun. 26, 2004); provisional 60/592,045 (filed on Jul. 28, 2004); provisional 60/605,191 (filed on Aug. 28, 2004); provisional 60/462,591 (filed on Apr. 15, 2003); provisional 60/618,107 (filed on Oct. 12, 2004); provisional 60/620.238 (filed on Oct. 18, 2004); provisional 60/647.836 (filed on Jan. 31, 2005); provisional 60/647,826 (filed on Jan. 31, 2005); provisional 0/725,896 (filed on Oct. 11, 2005); provisional 60/725,999 (filed on Oct. 11, 2005); provisional 60/787,850 (filed on Apr. 1, 2006) provisional 60/846,150 (filed on Sep. 20, 2006)
U.S. 2005/0174470 ("Yamasaki")	USA	Aug. 11, 2005 (filed Feb. 7, 2005)
U.S. 2005/0036103; provisional 60/493,728 ("Bloch")	USA	Feb. 17, 2005 (filed Aug. 10, 2004); provisional 60/493,728 (filed Aug. 11, 2003)
U.S. 7,747,143 ("DeKeyser")	USA	Sep. 19, 2002 (filed Jan. 11, 2002)
WO2004114654A2 ("Armand")	PCT/FR	December 29, 2004 (filed Jun. 16, 2004)
U,S. 6,389,340 ("Rayner")	USA	May 14, 2002 (filed Sep. 24, 1999)
U.S. 6,421,080 ("Lambert")	USA	July 16, 2002 (filed Nov. 5, 1999)
U.S. 6,088,635 ("Cox")	USA	July 11, 2000 (filed Mar. 3, 1999
U.S. 2004/0252193 ("Higgins")	USA	December 16, 2004 (filed Jun. 12, 2003)
U.S. 2005/0088521 ("Blanco 2")	USA	Apr. 28, 2005 (filed Oct. 22, 2003)
U.S. 2004/0150717 ("Page")	USA	Aug. 5, 2004 (filed Sept. 25, 2003)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 7,088,387 ("Freeman 1")	USA	Aug. 8, 2006 (filed Aug. 5, 1997)
U.S. 2002/005895 ("Freeman 2")	USA	Jan. 17, 2002 (filed Sep. 7, 2001)
U.S. 7,804,426 ("Etcheson")	USA	Sep. 28, 2010 (filed Dec. 4, 2006)
U.S. 8,601,515 ("Sparrell")	USA	Dec. 3, 2013 (filed Dec. 28, 2006)
U.S. 2004/0183912 ("Szolyga")	USA	Sep. 23, 2004 (filed Mar. 21, 2003)
U.S. 2007/0071395 ("Boone")	USA	Mar. 29, 2007 (filed Sep. 8, 2006)
U.S. 2007/0132773 ("Plante 2")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Special Report: The Patrol Video Project	LAW and ORDER	July 2004
DV-1 COMPACT 1-PIECE OVERHEAD SYSTEM (8-Panel Brochure)	WatchGuard Video	September 19, 2005
A Second Set of Eyes	Police Magazine	April 30, 2005
Digital Mobile Witness recording system	Craig Peterson, Law Enforcement Technology, p. 134, www.officer.com	September 2003
WatchGuard Video DV-1 Product	WatchGuard Video	October 6, 2004
WatchGuard DV-1 Product Specifications	WatchGuard Video	November 22, 2004
The Amazing Features of the WatchGuard DV-1	WatchGuard Video	January 20, 2005
WatchGuard DV-1 Graphical User Interface	WatchGuard Video	September 15, 2004
Deja View Now Shipping Camwear 100, World's First Wearable Mini-Camcorder That Solves The Dogged 'I Missed That Shot' Problem	Deja View, Inc.	October 19, 2004
Deja View Camwear 100 (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and	ACM Press	October 15, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Retrieval of Personal Experiences, pages 110-111)		
Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah	Deja View, Inc.	January 03, 2005
Quick Reference Guide, Camwear Model 100	Deja View, Inc.	2004
Deja View Camewear Model 100 User's Manual	Deja View, Inc.	2004
Police embracing digital video technology	The Associated Press/ The Gainesville Sun	July 8, 2004
Troubleshooting machine maladies	Packaging Digest	October 2002
20/20 Hindsight™ Makes High-Speed Video Available to Everyone	Monitoring Technology Corporation	November 3, 2002
20/20 Hindsight – Hindsight is Always Perfect	Monitoring Technology Corporation	June 28, 2004
Customers	Monitoring Technology Corporation	June 10, 2002
I-Witness Black Box Recorder	Transportation Research Board	
The DriveCam Driver Feedback System Presentation	DriveCam Inc.	February 2003
Installing and Configuring Hindsight 20/20 Software Version 5.1.2	DriveCam Inc.	September 29, 2005
A Fly on The Windshield?	PCT Magazine	April 2003
Eyes on the Road	Occupational Health & Safety	July 2004
introducing a rugged revolution in law enforcement video capture, toughbook arbitrator	Panasonic	January 2005
Toughbook Arbitrator User Manual	Insight Video Net, LLC	March 9, 2005
Business Plan	WatchGuard Video	March 1, 2004
More Police Installing Motorola Digital Video Cameras in Patrol Vehicles	Motorola, Inc.	May 26, 2005
Specification Sheet MVE Mobile Video Enforcer	Motorola Inc.	2004
Motorola's Mobile Video Enforcer Mobile Digital	Motorola, Inc.	August 19, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Video Recorder MDVR-100 Digital Video Management Solution & License Plate Recognition		
Video Sharing from Motorola	Motorola, Inc.	2006
SmartDrive scores telematics points	FleetOwner.com	May 26, 2006
SmartDrive Systems Inc. Establishes New National Award for a Fleet Risk/Safety Manager of the Year	government-fleet.com	October 18, 2006
Fleet Services, Managed Services: Features	SmartDrive.net	Sept. 1, 2006
POLICE VIDEO Up Close and Personal	LAW and ORDER	August 1999
Sheriff Baca Introduces In-Car Video System and "Cop-Cam"	County Digest (Country of Los Angeles)	March 2000
"'WearCam' (The wearable camera): personal imaging systems for long-term use in wearable tetherless computer-mediated reality and personal photo/videographic memory prosthesis," from the Digest of Papers, Second International Symposium on Wearable Computers (Cat. No. 98EX215)	IEEE	1998
Augmenting and Sharing Memory with eyeBlog, (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 105-109)	ACM Press	October 15, 2004
Saving What You Missed	https://njbiz.com/	August 9, 2005
A Mobile Phone-Enhanced Remote Surveillance System with Electric Power Appliance Control and Network Camera Homing	IEEE	2007

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
A Practical Home Security System via Mobile Phones	Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics	May 27-29, 2006
An historical account of the "WearComp" and "WearCam" inventions developed for applications in "Personal Imaging"	IEEE	1997
Remote Video Monitoring Over the WWW	Kluwer Academic Publishers	2003
Video Process Monitoring	Automation.com	February 3, 2003

Defendants disclose additional patents, patent application publications and other publications produced herewith and listed in Exhibit 1 as containing relevant disclosure as prior art. Defendants also disclose the references applied during patent examination, and specifically those that were applied in rejections under § 102 or § 103.

Defendants also contend that the Group 1 Asserted Claims are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the Group 1 Asserted Claims.

The following lists each system that is now known by Defendants to constitute prior art under 35 U.S.C. §§ 102(a), (b) and/or (g). Defendants contend that the following descriptions and events are stated on information and belief, and are supported by the information and documents that will be produced by Defendants and/or third parties. As discovery is ongoing, Defendants continue to investigate these prior art systems.

PATENT OWNER
Ex 2004

Defendants also reserve the right to rely upon any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein, alone or in combination. Defendants further reserve the right to rely upon any other documents or references describing any such system, knowledge or use.

The following systems, and any other systems identified in these contentions, are prior art under one or more of 35 U.S.C. § 102(a), (b), and (g):

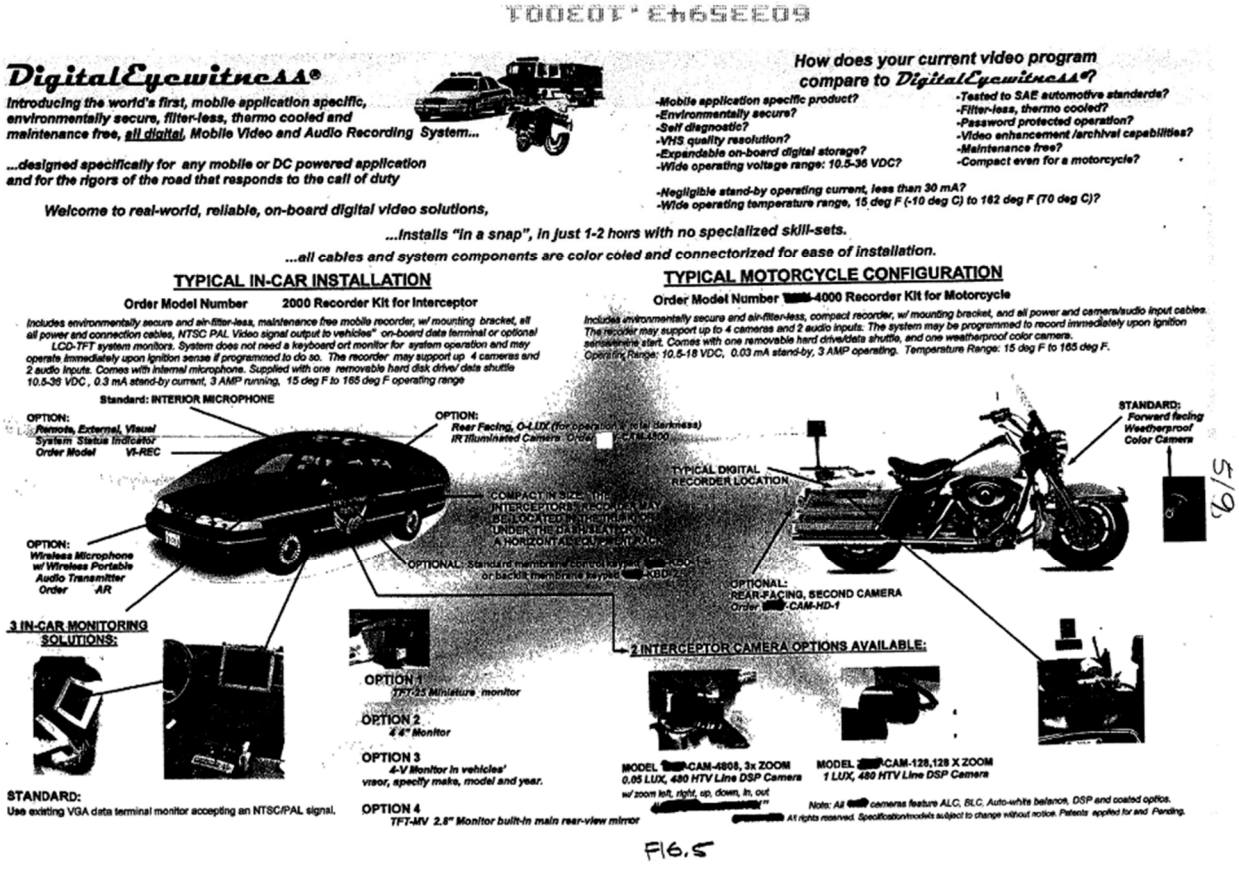
Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
Digital Eyewitness	Kustom Signals	On or before Oct. 30, 2001
Digital Mobile Witness	T.A.W. Security Concepts / Charles Kirmuss	On or before September 2003
WatchGuard Video Police In-Car DVD-Video Recorder DV-1 ("DV-1")	WatchGuard Video	Nov. 13, 2004
Deja View Camwear Model 100	Deja View, Inc. / Sid Reich	On or before Oct. 19, 2004
Coban In-Car System - Video Mobile Data Terminal	Coban Research and Technologies Inc. / SafeFleet / IBM / Hung C. Chang / Tyler, Texas Police Department / Texas Department of Public Safety / Yakima, Washington Police Department	On or before July 2004
IBM In-Car Digital Video System	IBM, Yakima, Washington Police Department	On or before May 2003
20/20 Hindsight	Monitoring Technology Corporation / John T. Fiore	On or before Oct. 2002
DriveCam	I-Witness Incorporated / Gary Rayner / Gary Etcheson / DriveCam Inc. / Lytx Inc.	On or before Nov. 2001
Toughbook Arbitrator	Panasonic	On or before Dec. 28, 2004
Digital Patroller (DP-1 and DP-2)	Digital Safety Technologies, Inc. / Integrain / Motorola	On or before Mar. 1, 2004
Mobile Video Enforcer	Motorola	In or before Spring 2005
Ranger digital video recorder	Sequent	On or before Jul. 2004
ICOP Model 20/20	McCoys Lawline / iCop Digital, Inc. / Safety Vision, Inc	On or before Aug. 2004

PATENT OWNER
Ex 2004

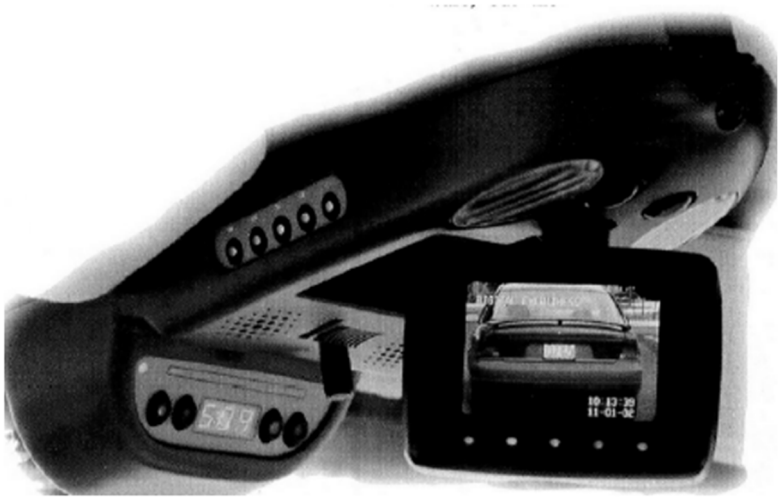
Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
VisionHawk	International Police Technologies	On or before Jul. 2004
Gemini Digital	Decatur Electronics	On or before Jul. 2004
Flashback	Mobile Vision / L3 Communications / L3 Mobile Vision / Louis Blanco / Leo Lorenzetti	On or before Oct. 2003
3200 Series In-Car System	Cisco	On or before Apr. 30, 2005
SmartDrive	Smartdrive Systems, Inc. / James Plante	On or before Dec. 8, 2005
CopCam	Semco Corporation	On or before Aug. 1999
Longwatch Surveillance System	Longwatch, Inc. / Steve Rubin	On or before Feb. 3, 2003

Digital Eyewitness

On information and belief, the Digital Eyewitness product was sold by Kustom Signals (and predecessors/successors) and was available for purchase on or before at least October 30, 2001. U.S. Prov. App. No. 60/335,943 at 29.



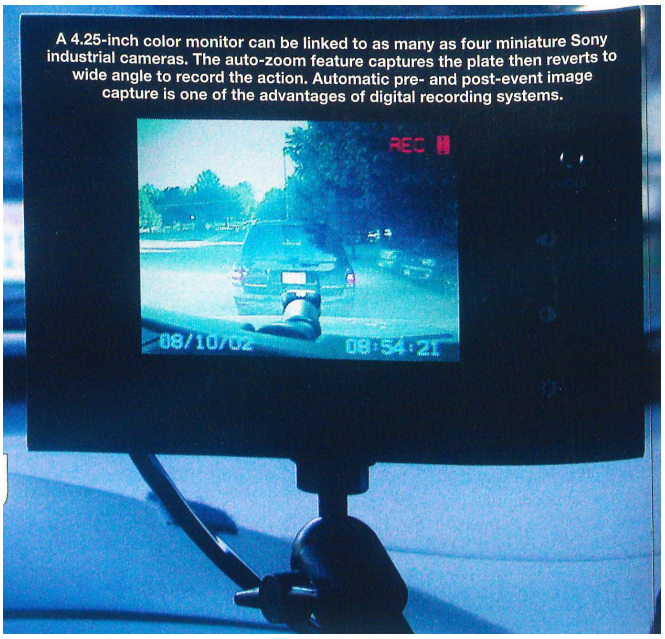
Id. Digital Eyewitness is a mobile video and audio recording system for law enforcement. *Id*.; Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 8. "The recorder may support up (*sic*)4 cameras." U.S. Prov. App. No. 60/335943 at 29. Video may be recorded automatically upon ignition start, or manually via an event trigger by the driver or activation of the chase lights/siren, with either alarm event only (*sic*)of pre-and-post event video capture." *Id*. at 33.



Special Report: The Patrol Video Project, LAW and ORDER, July 2004 at 8. "Like most other digital systems, the camera is recording continually when there is power to the system, with the output going to an internal memory chip." *Id*. at 9. "When the system is placed in 'record' mode, the contents of that chip are dumped to the DVD-RAM disk, so the events of the previous three minutes to 15 seconds are appended to the start of the recording." *Id*. The product "has an option to record to a removable hard drive instead of a DVD-RAM disk…." *Id*. at 10. "Digital Eyewitness also includes a crash sensor that places the system into record mode if accelerometers in the trunk mount unit detect an impact along any of the four sides of the vehicle." *Id*. at 9. "The pre-event segment is appended to, this record as well, so the events in the seconds preceding the crash will be recorded." *Id*. "There are inputs for the status of brakes, siren and emergency lights to show on the display and on the recording." *Id*.

Digital Mobile Witness

On information and belief, the Digital Mobile Witness product was sold by T.A.W. Security Concepts (and predecessors/successors) and was available for purchase on or before at least September 2003. *See* Digital Mobile Witness recording system, Craig Peterson, Law Enforcement Technology, p. 134, September 2003.



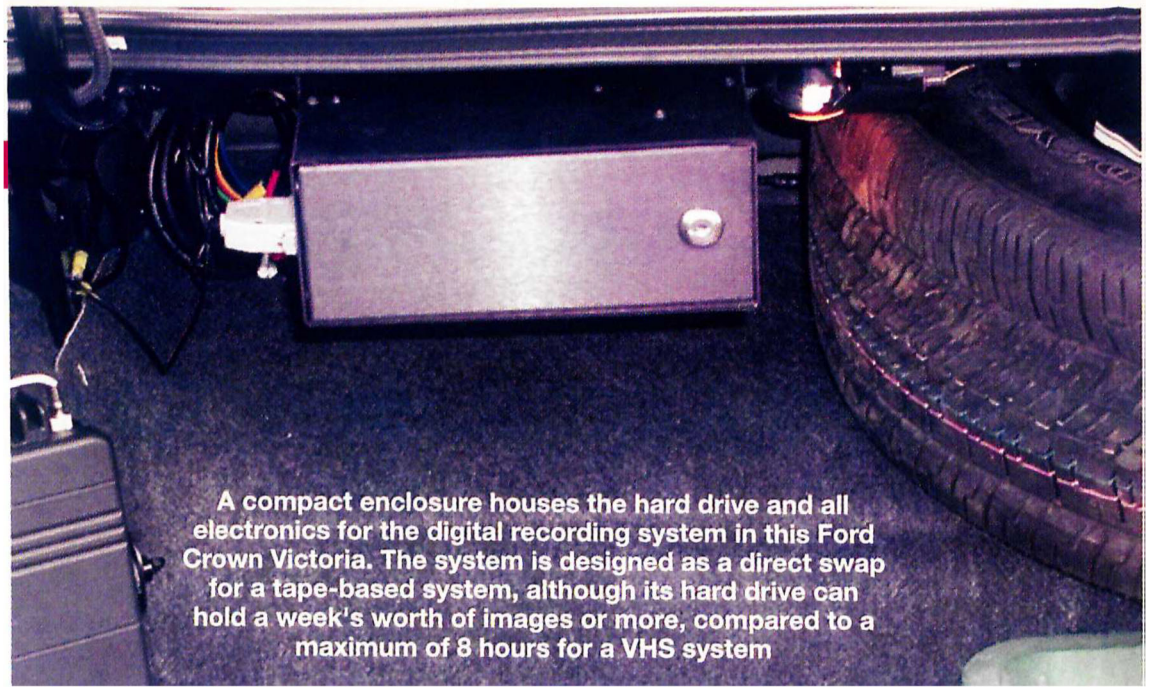
A 4.25-inch color monitor can be linked to as many as four miniature Sony industrial cameras. The auto-zoom feature captures the plate then reverts to wide angle to record the action. Automatic pre- and post-event image capture is one of the advantages of digital recording systems.



(Above) The Sony industrial-grade, high-resolution camera has digital zoom and is light enough to be mounted from an existing headliner screw in the police Ford Expedition test vehicle. It proved to be unaffected by windshield tint, although that also made it invisible from outside the vehicle.

(Right) A rearward-facing camera was mounted on the vehicle headliner looking through the tailgate glass. Like the front camera, tinted glass obscured it from inquisitive eyes.

"Use of digital imaging affords some tantalizing capabilities. Key among them are pre- and post-event recording. In essence, the unit records in a continuous loop, capturing 4.25 minutes of action before and after an event. Once the system has been triggered, either manually by activation of the emergency lights or by the officer switching on the belt-worn wireless microphone, the previous 4-plus minutes are captured." *Id*.



A compact enclosure houses the hard drive and all electronics for the digital recording system in this Ford Crown Victoria. The system is designed as a direct swap for a tape-based system, although its hard drive can hold a week's worth of images or more, compared to a maximum of 8 hours for a VHS system

WatchGuard DV-1

The WatchGuard DV-1 product was first introduced by WatchGuard Video, Inc. at the Annual IACP Conference in L.A. held on November 13-14, 2004 and began shipping to customers on or before October 21, 2005. WatchGuard Video Announces Production Shipping of the DV-1, Police1.com, [MOTOROLA_007500-MOTOROLA_007502] November 3, 2005. DV-1 is "[a] vehicle mounted digital recording system designed to burn the audio and video data gathered by one or more cameras and one or microphones of triggered events onto a DVD-Video disc." U.S. Prov. App. No. 60/617,988 ("Vanman Provisional") at 11.

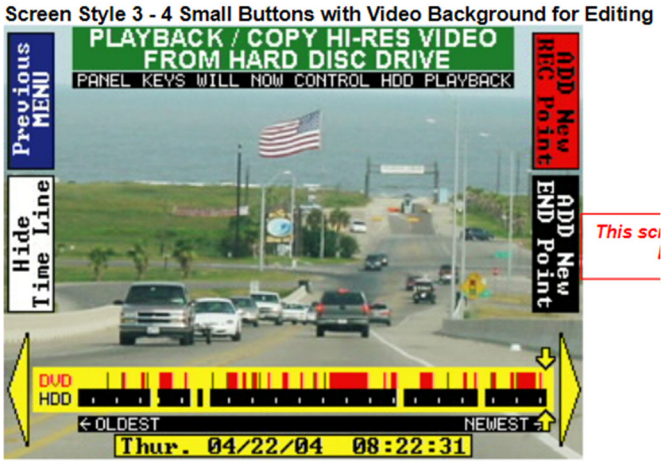






Physical DV-1 A Product [MOTOROLA_007049-MOTOROLA_007050]; DV-1 COMPACT 1-PIECE OVERHEAD SYSTEM (8-Panel Brochure), WatchGuard Video, [MOTOROLA_006566-MOTOROLA_006567] September 19, 2005 at 2.

"The product uses a combination of Random Access Memory, a Hard Drive, and a DVD Recorder to perform the DVD recording process." Vanman Provisional at 11; A Second Set of Eyes, Police Magazine, [MOTOROLA_011141-MOTOROLA_011156] April 30, 2005 at 8. "The system is able to automatically include video and audio data that occurred prior to the start of the event period or after the end on an event period by simply moving the event start and end flags based on rules determined by the user settings." *Id*. at 12. The product includes the "Record After the Fact" feature, which provides "the ability for users (or supervisors) to rewind footage on the hard drive to the point in time of interest, insert a new 'event start marker' and then insert a new 'event stop marker.'" *Id*. at 13; WatchGuard Video DV-1 Product, WatchGuard Video, [MOTOROLA_004959-MOTOROLA_004961] October 6, 2004 at 3-4; WatchGuard DV-1 Product Specifications, WatchGuard Video, [MOTOROLA_005498-MOTOROLA_005512] November 22, 2004 at 3; The Amazing Features of the WatchGuard DV-1, WatchGuard Video [MOTOROLA_004949-MOTOROLA_004958] January 20, 2005 at 1.



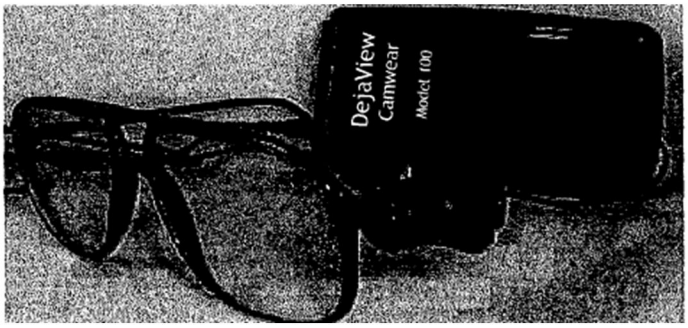
WatchGuard DV-1 Graphical User Interface, [MOTOROLA_010672-MOTOROLA_010701] September 15, 2004.

> **Playback**
> At any time the user can playback saved video data on the system's LCD display and speaker. The playback video can come from either the hard drive or the DVD+RW drive. The main menu will provide an option for playing back (or copying) video from the hard drive:
>
> The control panel's recorder keys (play, rew, ff, stop, pause, skip +, skip -) will by default playback video from the DVD disc. When the user has selected playback from the hard drive, while in that mode, the panel keys (rec, play, ff, stop, pause, skip+, skip-) will be controlling review of the hard drive video.
>
> If playback is selected when there is an event that has not yet been written to the DVD, a message will be displayed:
> - NOTICE: There is some video data that has not yet been copied to the DVD disc.
> - Continue with Playback of chapters already copied to this DVD,
> - Review or Playback ALL video from the Hard Drive
>
> When hard drive video review is selected, control panel keys will allow controlling the video playback from the hard drive when in hard drive video review mode. During any playback session, the system will continue to record current camera video to the hard drive.
>
> Additional Hard Drive Playback Options Could Include:
> - Select Video to be Copied to DVD
> - Hide Time Line (and soft key displays)
>
> When in Hard Drive Playback Mode, the Forwards and Backwards soft keys provide rapid FF or Rewind control. Pressing either of these soft keys, will begin moving the time position indicators on the time line slowly – after holding the soft key down for two seconds, the FF / Rew search speed will increase. The panel Step + and Step – keys will jump the FF / Rew position to the next Record Start or Stop Point OR the next full hour point (14:00:00, 13:00:00, 12:00:00).

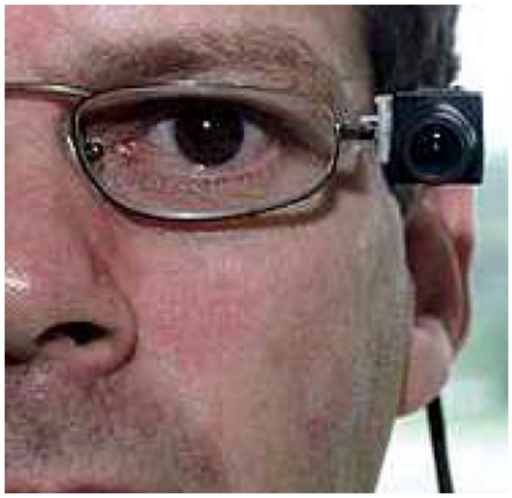
Id.

Deja View Camwear Model 100

On information and belief, the Deja View Camwear Model 100 was sold by Deja View Inc. and available for purchase on or before October 19, 2004. Deja View Now Shipping Camwear 100, World's First Wearable Mini-Camcorder That Solves The Dogged 'I Missed That Shot' Problem, Deja View, Inc., [MOTOROLA_006595-MOTOROLA_006596] October 19, 2004, at 1. Camwear 100 is a wearable and hands-free camcorder used to capture and save events. *Id*.





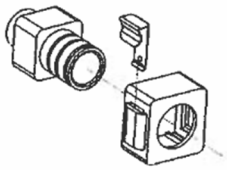


U.S. Prov. App. No. 60/461,674 at 14; Deja View Camwear Model 100, CARPE'04, [MOTOROLA_006589-MOTOROLA_006590] October 15, 2004, at 2.

Attaching the Camera (Glasses)

NOTE: Remove lens cap from camera before use.

1. Attach the correct size clip for your glasses into the housing.

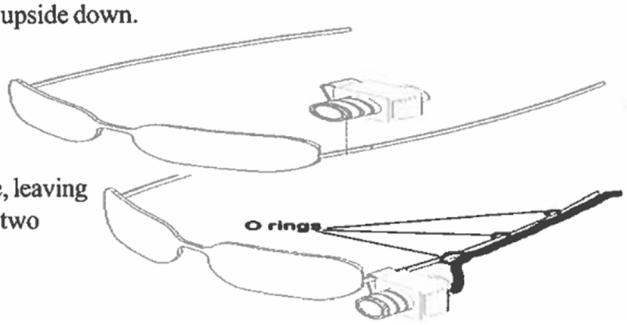


2. To remove a clip, use your finger to depress the raised portion below the holster and slide it upwards and ou



3. Attach the camera to your glasses leaving the wire facing down (as shown below). This is important to make sure the camera is not placed upside down.

4. Fasten the wire to your eyeglass frame using the provided 'O' rings as shown.
Just slide the three rings over the frame, leaving one close to the camera and the other two equally spaced along the frame.



Recording a Video

Quick Reference Guide, Camwear Model 100, Deja View, Inc., [MOTOROLA_011172-MOTOROLA_011173] 2004 at 2.; *see also*, Deja View Camewear Model 100 User's Manual, Deja View, Inc., [MOTOROLA_011180-MOTOROLA_011210] 2004 at 14.

"[T]he Camwear 100 is tiny and can be worn on a pair of eyeglasses or bill of a hat, and has the unique ability to record visual experiences after the fact." Deja View Now Shipping Camwear 100, World's First Wearable Mini-Camcorder That Solves The Dogged 'I Missed That Shot' Problem, Deja View, Inc., [MOTOROLA_006589-MOTOROLA_006590] October 19, 2004, at 1. "The camcorder is always on as a scanning feature feeds a continuous video stream into the control unit or 'hip pack'." *Id.* "Although users may turn away from the action for a few seconds, they can still capture up to 30 seconds of the previous action by hitting the 'record' button." *Id.*; Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah, Deja View, Inc., [MOTOROLA_006591-MOTOROLA_006592] January 03, 2005.

Key Features:

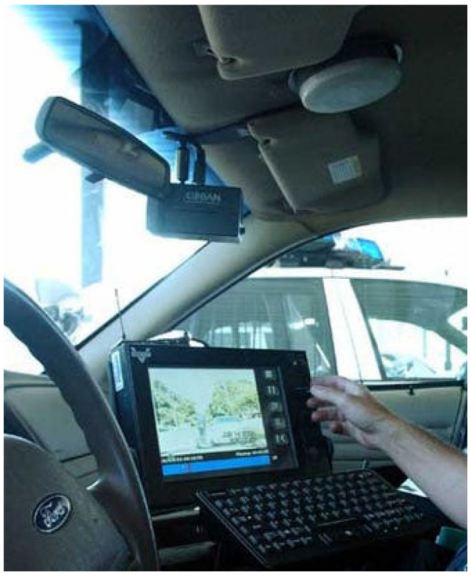
-- Wearable on glasses or cap for completely hands-free operation.
-- Rechargeable battery provides up to 6 hours of power.
-- Video quality at CIF (320x240) and 30 frames per second.
-- From 64MB to 1GB memory. (Minimum of 16 video/audio clips with 64MB card).
-- Indicator light warns when less than five minutes of storage capacity remain.
-- 110v charger similar to cell phone chargers.
-- USB cable along with ArcSoft ShowBiz 2 software allows downloading video/audio clips to PC.
-- Direct output available to TV, VCRs, or DVD burner via RCA jacks.
-- File viewing possible with ArcSoft ShowBiz 2 software or Windows Media Player.
-- ArcSoft ShowBiz DVD 2 software is also included, allowing users to create CDs and DVDs and, depending on their computer hardware configuration, users can capture still photos from their saved video clips.

Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah, Deja View, Inc., [MOTOROLA_006591-MOTOROLA_006592] January 03, 2005.

Coban In-Car System - Video Mobile Data Terminal

On information and belief, as early as July 2004, the Coban In-Car System was in use at the Texas Department of Public Safety (primarily a highway patrol agency) and the Yakima, WA, Police Department. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 12; Police embracing digital video technology, The Associated Press/The Gainesville Sun, [MOTOROLA_007575-MOTOROLA_007576] July 8, 2004 at 1. The Coban In-Car System is a mobile video and audio recording system for law enforcement. Police embracing digital video technology, The Associated Press, July 8, 2004 at 1-2.

PATENT OWNER
Ex 2004



Id. at 2. "In the car, the Coban system has both front and rear-facing cameras, although only one at a time can be recording." Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 13. "The mobile computer mounted in the car serves as both the control head and the monitor for the system, and connects to the removable hard drive unit." *Id*. "Coban has a programmable pre-event buffering." *Id*. "Each drive will hold about 60 hours of the MPEG-1 or 30 hours of MPEG-2 files that the system creates, and officers typically record two hours or less of video on a shift." *Id*. "The camera makes video continuously, but records only what the officer specifies, plus the previous minute…." Police embracing digital video technology, The Associated Press, [MOTOROLA_007575-MOTOROLA_007576] July 8, 2004 at 1. "The system can encode MPEG-4 video real-time for wireless video transmission back to a central office if the wireless infrastructure is available." Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 13. "Users can now search on any number of criteria to locate a particular video clip…." *Id*. at 12. For example, driver's license data or GPS coordinates. Police

PATENT OWNER
Ex 2004

embracing digital video technology, The Associated Press, [MOTOROLA_007575-MOTOROLA_007576] July 8, 2004 at 1-2.

IBM In-Car Digital Video System

On information and belief, as early as May 2003, an in-car digital video system from IBM was in public use by at least the Yakima, Washington Police Department:

> The old-fashioned, VHS-tape cameras have their shortcomings, including hidden costs for officer training and tape storage. But the biggest drawback of all may be what the cameras don't capture: the crime. Camera recording is activated manually by a police officer, or automatically when a squad car's siren is turned on. That usually happens after a suspect runs a red light or swerves awkwardly in traffic. Digital cameras can solve that problem by constantly recording video directly to a computer stored in the police car. "We will actually able to capture the person who ran the red light. We can preserve that now for evidence," said Capt. Jeff Schneider of the Yakima, Wash., police department, which is the first client of IBM's new digital police video camera system. "Before, videos were limited to documenting traffic stops. We now can capture the event that really caused the traffic stop," Schneider said. *** When an incident occurs and an officer hits the siren, the computer preserves two to four minutes of the video immediately preceding the incident — a concept IBM calls "pre-recording." In Yakima, 32 squad cars will be outfitted with Windows PCs and hard drives that can store about 50 hours of video, Crowell said. Nine other cities are also testing the system, according to IBM. VIDEO CAN BE BEAMED BACK Going digital adds a host of new capabilities to police video, Crowell said. For example, GPS data can be embedded on the video fi le, adding evidence of a police car's location that could turn out to be crucial at trial. Ultimately, video of incidents will be beamed back to police headquarters on wireless networks, allowing dispatchers to keep an eye on potentially dangerous situations.

Squad car video cameras go digital, MSNBC, May 14, 2003.

> Lawbreakers in Yakima, Wash., are about to find their lives a lot harder now that the city's police department has decided to outfi t its cruisers with digital video systems from IBM. The digital system, which never stops recording and can be integrated with satellite Global Positioning Systems, replaces videotape-based "police-car cams" like those currently used by police departments across the country, the company said in a statement. The Yakima Police Department, IBM's fi rst customer for the new system, is among several departments moving from videotape to digital technology. According to IBM, seven other law enforcement agencies across the country, including the Texas Department of Public Safety, and the Seattle and San Marcos, Calif., police departments, are running pilot programs of IBM's system. Yakima Police Capt. Jeff Schneider said today that one important feature of the digital system is its ability to "prerecord," or capture the first few

PATENT OWNER
Ex 2004

minutes of an event. A typical video camera system is turned on only when an officer switches on his overhead pursuit lights. The IBM system is always running, and when the pursuit lights go on, it starts to capture the event, plus the preceding four minutes. "What's happening now is police departments are losing half the picture," Schneider said." Let's say someone runs a red light. Well, currently you get a very nice picture of the person getting stopped and getting a ticket or warning and you see their contact with the police officer. But what you miss is a picture of them running the red light in the first place. With this digital system, you capture that -- and that's important for police departments because for one thing you have the evidence."

The system also helps with data management and retrieval, said Gary Crowell, who heads upthe police video project for IBM Global Services. Schneider agreed. Under the older system, when recorded information needs to be retrieved, some "poor sap" has to sit in front of a VCR and search videotapes. But with digital technology, information such as the name of the officer, the car number, the date and even the location is automatically indexed as an event is being recorded.

IBM offering digital video systems for police cars, Computerworld, May 15, 2003.

IBM has developed a digital recording system for police squad cars that will capture sound and video from traffic stops and arrests. *** The digital-video system consists of a PC, a removable hard drive, and software to record the video. At the station, a large server with up to 3.5 terabytes of storage--about 5,000 hours worth of digital video--will hold all the video collected by police. Officers will check out a hard drive at the beginning of their shift, insert it into the PC in the squad car and then return the hard drive at the end of their shift. On average, a shift will produce two to four hours of video, Crowell said. *** With the IBM system, metatags, or digital labels, including the data, a scan of the driver's license and the location of the arrest or traffic stop can be used to search for the right video clip. Moreover, the digital recorder--basically a PC made tougher to withstand shocks--has a feature found in many TiVo-like personal video recorders: It continuously caches DVD-quality video. With videotape systems, the recorder is typically turned on when the law-enforcement officer switches on a police car's flashers. With the digital video system, the two minutes to four minutes of video captured before an incident will be instantly written to the hard drive, essentially storing a glimpse into the past. Such pre-event recording is important, Schneider said. "You have a violation that occurred, but what you capture now is the officer turning on his light, and that's only half the piece of the pie," he said. "Wouldn't it be nice if you could get the guy running the red light in the first place? That's what this system gives us."

Digital cop cams will be watching, CNET, May 15, 2003.

In the analog world of law enforcement, when a driver blows through a red light, the police officer who pulls him over can capture the traffic stop on videotape. In the digital world, the traffic cop will be able to capture the actual crime. Drivers in Yakima should keep that in mind because this city is the first commercial customer

PATENT OWNER
Ex 2004

> in the country for IBM's new "in-car" digital video system -- essentially a "cop cam" -- that never stops recording." The No. 1 cool thing is pre-event recording," police Capt. Jeff Schneider said. Once a patrol officer activates the police car's flashing lights, the digital system retrieves and saves video and audio recorded in the four previous minutes and continues saving them until the officer turns off the system. "Now what you'll see is the person run the red light first," Schneider said. Ultimately, that kind of information will provide protection for both the public and police officers, he said. *** The new system is indexed, meaning there's no need to store thousands of videotapes, catalog and maintain them or spend a lot of time with a VCR and a television searching for a 20-second clip. The system can retrieve data using any number of search cues from date, time and location to an officer's name, an offender's name or a call location. "It's going to be a massive timesaver," Schneider said.

Yakima goes digital to nab bad drivers, The Associates Press, May 16, 2003.

20/20 Hindsight

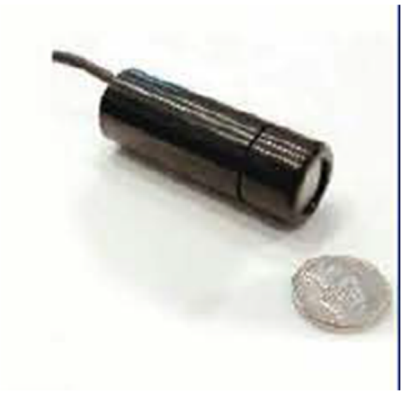
On information and belief, as early as October 2002, the 20/20 Hindsight product had been sold and offered for sale by Monitoring Technology Corporation and was in public use at least at the Brenton Engineering manufacturing facility. Troubleshooting machine maladies, Packaging Digest, [MOTOROLA_011222-MOTOROLA_011225] October 2002; 20/20 Hindsight™ Makes High-Speed Video Available to Everyone, Monitoring Technology Corporation, [MOTOROLA_011212] November 3, 2002 Web Capture; Customers, Monitoring Technology Corporation, [MOTOROLA_011215] June 10, 2002 web capture.

20/20 Hindsight "utilizes patented technology to record digital video while storing up to 48 continuous hours – even while reviewing previously recorded events." 20/20 Hindsight – Hindsight is Always Perfect, Monitoring Technology Corporation, [MOTOROLA_011220-MOTOROLA_011221, MOTOROLA_011214, MOTOROLA_011217] June 28, 2004 Web Capture at 1.

PATENT OWNER
Ex 2004



20/20 Hindsight provides another set of eyes on the manufacturing floor. The system can take pictures at up to 1/100,000 of second shutter speed and constantly records up to 60 pictures per second. 20/20 Hindsight will hold multiple hours of video in a circular buffer. The result is an industrial appliance that gives operators the ability to run machines faster and more reliably.



Id.

PATENT OWNER
Ex 2004

Feature Summary

- User selectable frame rate (60/50, 30/25 or 10 fps)
- Over 48 hours of recent video in an active circular buffer at 10 fps (9 hours at 60 fps)
- Continuous uninterrupted recording
- ScanBack™ technology scrolls through the active buffer and replays high-speed video in slow motion



- 640 x 480 resolution with 1/100,000 sec. shutter
- Process interface or manual event triggering
- Automatic event archive of over 500 events
- AVI or Pack & Go output to CDR

Process Interface & Manual Triggering

Video events can be triggered in the system either by the process or manually. Process inputs can be offset by a fixed time. With this capability, 20/20 Hindsight can show off-quality production at an upstream location. With every trigger, an event marker is placed in the active buffer bar. In addition, a user configurable length of video is automatically placed in the Event Archive table for later review

Automatic Event Archive

20/20 Hindsight stores video of past events for later review. The system can archive over 500 events. Users can click on any event marker and review the video. Events can be marked for permanent storage or deleted at any time.

PATENT OWNER
Ex 2004



Id. at 2. A 20/20 Hindsight User's Manual was attached to provisional application no. 60/282,162, published December 19, 2002 (US 2002/0191952).

> The 20/20 Hindsight is a video event capture tool that is used to capture process upsets in a production or packaging line. Plant engineers can replay these events to observe the upset in detail and in slow motion to determine the root cause. The system continuously records one or more video signals to capture buffers and displays the contents of these buffers while recording is in progress. When an event happens, the operator views the event in the buffer and can manually make a movie of the event. A movie can also be made automatically by an interface to a control system, process upset sensor, or vision analysis system. A database stores the event information for easy review of the event history.

Provisional Pat. App. No. 60/282,162 at 14.

> The 20/20 Hindsight system employs a standard CCD type closed circuit TV (CCTV) camera. This camera outputs an analog baseband, or composite video signal compatible with the video input of a television monitor, or the video input of the Hindsight video capture card. The video signal is carried over a 75-ohm coax cable :from the camera to the Hindsight computer. The video signal is digitized (and compressed) in the Hindsight system, and digital video data is stored on the computer's hard disk. Digital video data is stored in a circular buffer. As the storage capacity of the buffer is reached, the oldest data is overwritten by new incoming video data.

Id. at 16. "The 20/20 Hindsight system can respond external events, making a movie automatically using the external trigger interface." *Id*. at 18. "The external trigger could come from a control system, process upset sensor, or vision analysis system." *Id*. "External events are signaled to 20/20 Hindsight by a contact closure, such as a relay." *Id*.

PATENT OWNER
Ex 2004

Buffer Size (Megabytes)	This parameter specifies how much disk space you wish to dedicate to the circular video buffer. The size of the buffer determines the number of hours and minutes of video data that can be stored before the buffer begins to overwrite.
Number Of Frames Before Event	This parameter specifies the number of frames of video to be included in the movies before the trigger frame. There are 60 frames per second for NTSC cameras and 50 frames per second for PAL cameras.
Number Of Frames After Event	This parameter specifies the number of frames of video to be included in the movies after the trigger frame.

Make Movie

Clicking on the Make Movie button will cause the system to make a movie around the currently displayed frame. The movie icon will appear in the position slider bar and an entry will appear in the movie history table.

Id. at 19-20, 22.

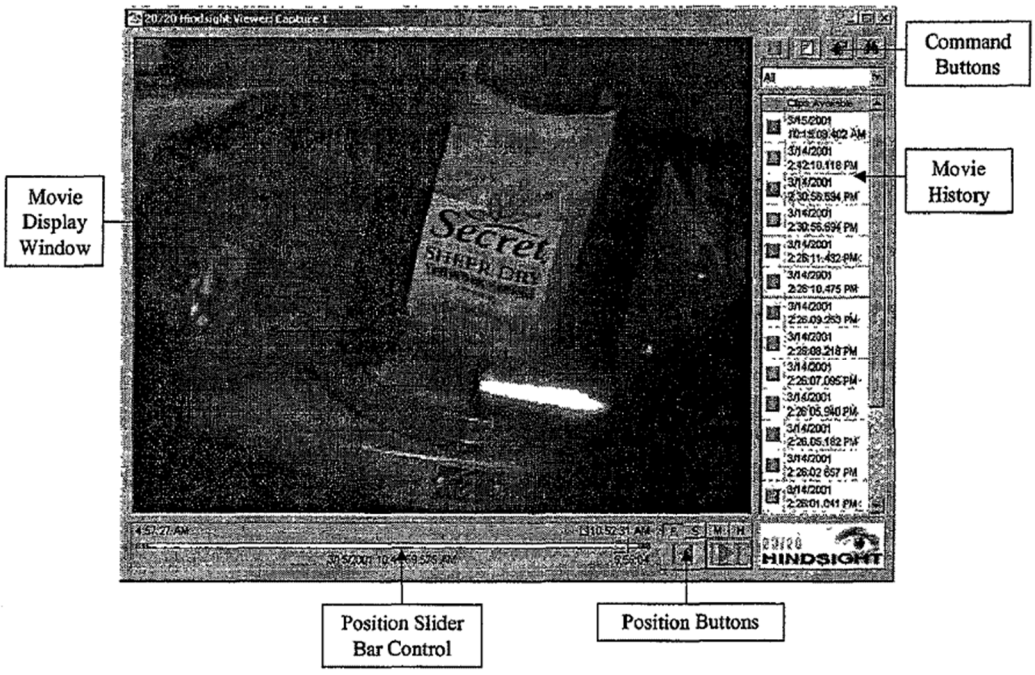


Figure 6: Layout of Hindsight Viewer

PATENT OWNER
Ex 2004

Id. at 21.

Position Slider Bar

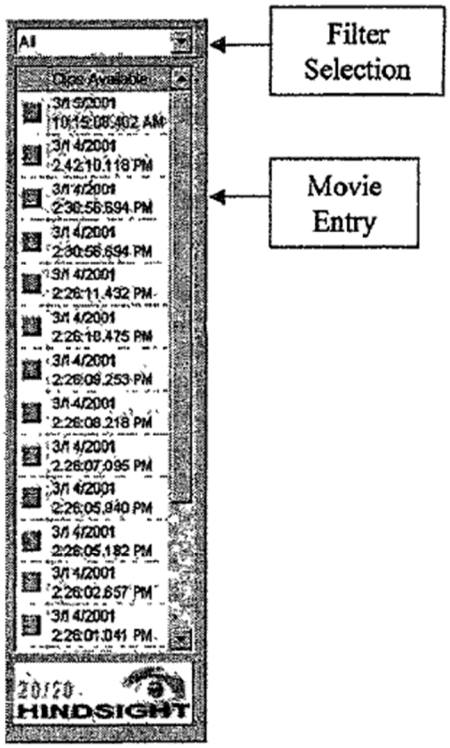
The position slider bar shows buffer status and current frame information (Figure 6). The times of the beginning and end of the buffer are shown at the left and right ends of the bar. The duration of the buffer is shown at the lower right end.

The current frame marker indicates the location of the currently displayed frame in the buffer. The date and time of the current frame is shown in the center of the position slider bar. The position of the current frame marker will move as the video is played. You can search through the video buffer by holding down the left mouse button over the marker and dragging it to the left and right. As the indicator is moved, the movie display will update to show the frames at the new indicator positions. If the current frame indicator is moved all the way to the right end of the slider, then the live video is displayed as it enters the buffer. If it is positioned at the left end of the slider, then a movie is displayed of the last frames as they drop out of the buffer.

When a movie is made either manually from the user interface or automatically from an external event, a movie icon will be positioned in the slider bar indicating the location in time of the movie. As time progresses, the position of this icon will move to the left as the video data ages. When the date/ time of the movie falls out of the buffer, the movie icon will disappear.

Id.

PATENT OWNER
Ex 2004



Movie History

Filter Selection

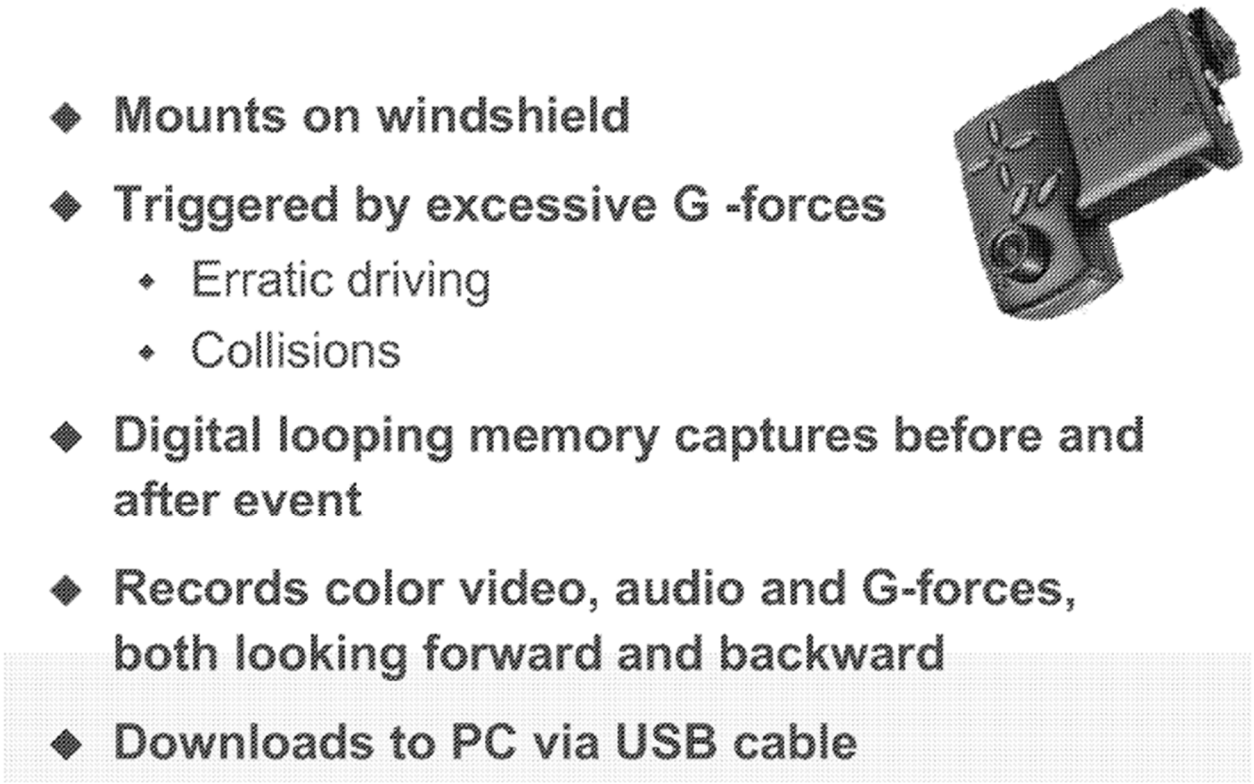
The Filter Selection combo box allows a filter to be applied to the movie list. The default setting for this filter is to show All. Other selections are In Buffer, which only shows those movies that are still in the video buffer, and Keep, which shows those movies that have been marked for permanent retention.

Figure 10: Movie History Table

Id. at 23. "A right click on the movie entry invokes a menu with the Make Movie Permanent and Delete items." *Id*. "Movies are normally kept until the maximum movie count is reached." *Id*. "After that, the oldest movies are automatically deleted as new movies are created." *Id*. "However, if the movie has been made permanent then it will not be deleted." *Id*.

DriveCam

On information and belief, as early as November 2001, the DriveCam product was on sale and in use. I-Witness Black Box Recorder, Final Report for ITS-IDEA Project 84, Transportation Research Board, [MOTOROLA_007337-MOTOROLA_007355] November 2001 at 8-9; The DriveCam Driver Feedback System Presentation, DriveCam Inc., [MOTOROLA_006938-MOTOROLA_007048] February 2003 at 46.



The DriveCam Driver Feedback System Presentation, DriveCam Inc., February 2003, at 36.

"I-Witness Incorporated's first product, DriveCam-1, is a digital video event data recorder." I-Witness Black Box Recorder, Final Report for ITS-IDEA Project 84, Transportation Research Board, November 2001 at 1.

> When triggered by a collision, erratic driving, or even a near miss DriveCam saves information from 10-seconds before the trigger event to 10-seconds after. It can then replay the event showing video, audio, and acceleration/deceleration forces (G-forces) experienced during the incident. Captured events are date and time stamped and can be downloaded to a laptop computer or VCR for viewing and/or long-term storage. Events can be displayed immediately on a television or camcorder - DriveCam has the same familiar fast-forward, rewind and play buttons as a VCR.

Id. "DriveCam includes a sensitive black and white CMOS camera, microphone, 4-direction accelerometer, a real time clock, and other electronic components all controlled by software." *Id*.

> DriveCam continuously records Video, Audio, and 4 directions of G-Forces, in a circulating digital memory buffer of 16 MB. When triggered, DriveCam records for l0 more seconds and then stops and saves 20 seconds of data.…The driver can also

> trigger DriveCam manually to capture road rage events, hit-and-run accidents, or other road hazards.

Id. "DriveCam is designed to record the 20-second period surrounding an event and may be triggered by any of three means:" *Id*. at 3.

Priority	Event
1	Crash
2	Erratic Driving
3	Manuel Button Push

Id.

> Each event type is assigned a priority. An event already recorded in memory may only be overwritten by an event of equal or higher priority. For example, a crash event is the highest priority and will always overwrite previous events. An erratic driving event will record and overwrite previous erratic driving or manually triggered events, but cannot record over a crash event. Manually triggered events are lowest priority; they may only record over previous manually triggered events, but not crashes or erratic driving events.

Id. "Erasing the crash event will enable manual triggering and recording of erratic driving events." *Id*. at 14. "DriveCam has helped crash investigations in four main areas: eye witness testimony, insurance claims, police reporting, and driver safety." *Id*. at 10. "DriveCam Units within vehicles capture events which are then downloaded to the HindSight database for review." Installing and Configuring Hindsight 20/20 Software Version 5.1.2, DriveCam Inc., [MOTOROLA_006784-MOTOROLA_006937] September 29, 2005, at 24. "Download can occur through the USB port on the side of the unit or across a wireless network for wireless enabled DriveCam Units." *Id*.

PATENT OWNER
Ex 2004

The DriveCam system helps managers monitor erratic driving by continuously recording video, audio and four directions of G-forces in a digital looping memory. It automatically saves the recording when triggered by G-forces caused by such things as hard braking, rapid acceleration, harsh cornering or collisions. Each recorded incident includes information on the level of G-forces on the vehicle and the time and date of the event. A red flashing light on the device alerts managers that one or more events have been recorded. At Clark, these events are downloaded and viewed weekly.

A Fly on The Windshield?, PCT Magazine, [MOTOROLA_006619-MOTOROLA_006783], April 2003 at 160.



Id. "The camera has the ability to store 15 to 20 emailable 'clips,' or event recordings, in its permanent digitial memory." Eyes on the Road, Occupational Health & Saftey, [MOTOROLA_006619-MOTOROLA_006783], July 2004 at 165. "Larger memory cards are avaliable as an option." *Id*.

Toughbook Arbitrator

On information and belief, the Toughbook Arbitrator product was sold by Panasonic and was available for purchase on or before December 28, 2004.

PATENT OWNER
Ex 2004



Introducing the groundbreaking Toughbook Arbitrator—a rugged revolution in law enforcement video capture.

The Toughbook® Arbitrator is a rugged and durable mobile digital video system specifically engineered to excel in the demanding environments law enforcement personnel face every day. Built with legendary Toughbook reliability, this fully-integrated system offers unparalleled video capture, storage and transfer—and is designed to work with back-end software for seamless video management, including archiving and retrieving. Capture it all with the Toughbook Arbitrator.

KEY FEATURES

- Entire system, including camera, recorder with software and P2 card and wireless receiver, is easily installed in the trunk or front of law enforcement vehicles
- Camera is temperature-, dust- and vibration-resistant

***

- High-capacity reusable 4GB P2 card stores up to 16 hours of video data and can be rewritten more than 100,000 times without a decrease in quality
- Recorded files can be archived on a local/external hard drive or DVD-R/CD-R and wirelessly transmitted via 802.11g, EDGE and EV-DO

P2 Recording Deck

FEATURES

• Recording Media	Solid State P2 Card
• Number of Card Slots	2
• P2 Card Capacity	4GB (1 included)
• Recording Time	16 Hours Per Card (512Kbps) 8 Hours Per Card (1Mbps)
• Resolution	320 x 240 (QVGA)
• Pre-/Post-event Recording	0–180 Seconds Adjustable

CONTROLS

• Key Lock	Tamper-resistant for Evidentiary Integrity
• On P2 Deck	Record, Stop
• Via Laptop PC	Record, Stop, Play, Pause, Slow
• External Triggers	Up to 8 Configurable (Including Speedometer, Radar, Air Bag, Shotgun Rack)

PATENT OWNER
Ex 2004

Software

• Unlimited Meta Data Tags	Configurable (Date/Time, ID, Radar, GPS, Triggers)
• Officer Notes	Manual or Automated for Quick Archive Retrieval
• Radar Gun Protocol	Multiple Supported

Other

• Ports	Serial, Ethernet (RJ-11)
• Data Upload	Wireless, Ethernet, Removable Media
• Warranty	One year, parts and labor

introducing a rugged revolution in law enforcement video capture, toughbook arbitrator, Panasonic [MOTOROLA_010123-MOTOROLA_010124] January 2005 at 1.



video and audio recorders

The Toughbook Arbitrator's video and audio recorder mount easily in a patrol car's console or trunk. Advanced MPEG4 technology delivers high quality 30-frame-per-second video at low bit rates, enabling the transfer of video files over 802.11g, EDGE and EV-DO wireless networks at reduced thru put rates. Other features include:

- Three audio inputs, two channel audio track
- User-definable pre- and post-event recording from 1-180 seconds
- High-performance video encoding for subsequent viewing, storage, reproduction and archiving
- Wirelessly transfer eight hours of video in 15 minutes via 802.11g
- Reduced storage costs while maintaining quality video files

Id. at 2.

> Pre Record Time Info: This is where the administrator will set the pre-event recording time. This is the amount of time the recorder is saving in memory that will be appended to a video file when it is created. This is expressed in seconds to a maximum of 180 seconds.

PATENT OWNER
Ex 2004

> Post Record Time Info: This is where the administrator will set the post-event recording time. This is the amount of time the recorder will continue to record after a recording event has been stopped before the video file is closed. This is expressed in seconds to a maximum of 180 seconds.

Toughbook Arbitrator User Manual, Insight Video Net, LLC, [MOTOROLA_009839-MOTOROLA_009866] March 9, 2005 at 7.

Arbitrator - Live Control

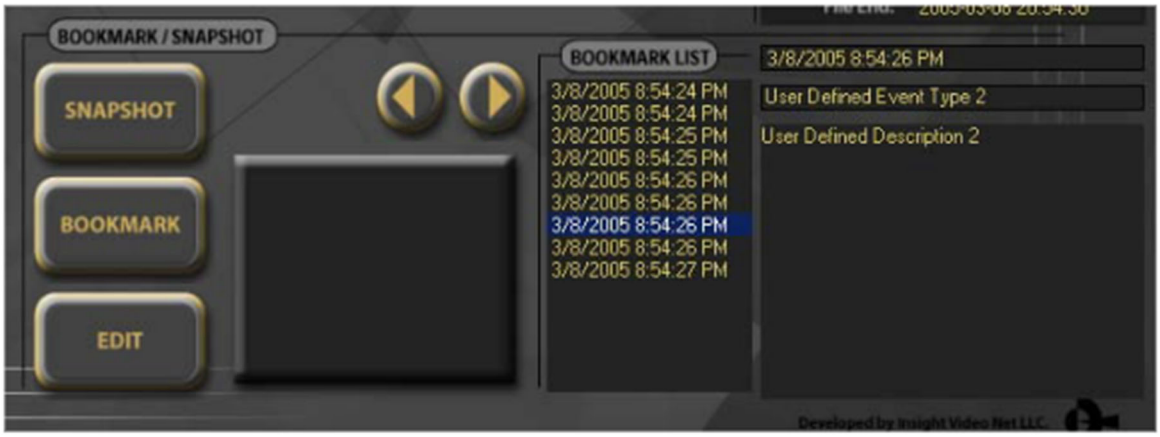
Launch the Arbitrator by double clicking on the Toughbook Arbitrator shortcut Icon on the desktop. By default the Live Section will load.



Id. at 13.

> Archive List: The archive list allows the officer to review any video and meta-data residing on the current system. The Archive section contains a listing of the current files on both P2 cards. Expanding the slot1/slot2 nodes will yield the dates containing video files. Expanding the dates will yield the specific video files on each card. The Load button will refresh the file list if any files were created during the viewing of video. When depressed, the Load button will not recover until the entire list has been successfully populated. Storage Capacity indicates the total remaining space on both cards. It is a cumulative size (see figure 1 below).

Id. at 18.

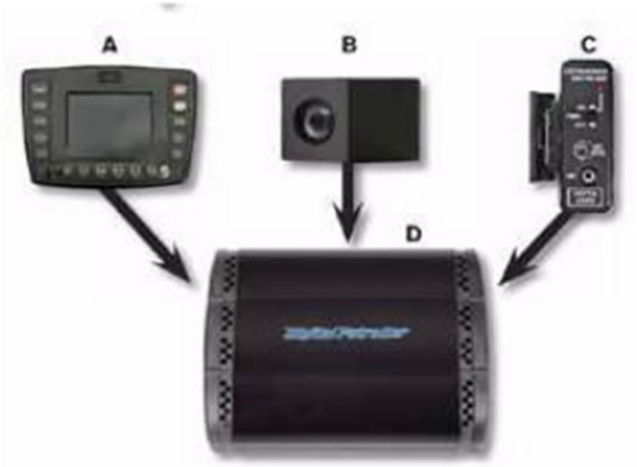


This section allows the officer to interact with previously recorded data. Officers can leave notes, edit changes, and take snapshots of specific sections of their video. The snapshot button (pictured in the top left) captures a bitmap of the currently playing file. The bookmark button will create a new bookmark at the currently viewed location of video. When a bookmark is created in such a manner, the event type and description will be blank. It is the officer's responsibility to provide this data. The timestamp will be populated with the time of the video. Once the data is completed, it must be committed by pressing the edit button.

Id. at 20.

Digital Patroller (DP-1/DP-2)

On information and belief, the Digital Patroller product was sold by Digital Safety Technologies, Inc (and predecessors/successors) and was available for purchase on or before March 1, 2004. *See* Business Plan, WatchGuard Video, March 1, 2004 [MOTOROLA_006339-MOTOROLA_006388] at 30.



Id. "It features a single panel LCD / user control keypad that can be mounted on a stalk or on a bracket above the rear view mirror." *Id*. "The system can utilize an automatic wireless data transfer scheme when the patrol car is parked at the police station." *Id*. "They have three larger customers to date – Elgin IL, and Hinds County MS, and Jackson MS." *Id*. "Of the hard drive systems available, the DST system is the most comprehensive." *Id*.

Mobile Video Enforcer

On information and belief, the Mobile Video Enforcer product was sold by Motorola and was in use in at least Wilmington, N.C. in or before Spring of 2005. More Police Installing Motorola Digital Video Cameras in Patrol Vehicles, Motorola, Inc., [MOTOROLA_007472-MOTOROLA_007473] May 26, 2005.

> The Mobile Video Enforcer consists of a Mobile Digital Video Recorder (MDVR) mounted in an officer's vehicle and a Digital Video Management Solution (DVMS) located at the police department. The MDVR captures full-motion, DVD quality video that features pre-event and automatic event-triggered recording capabilities. Each video also stores incident and criminal profile information.
>
> The DVMS automatically uploads, archives, and organizes captured video from the MDVR units. Video clips and still images can be retrieved within seconds from the database in a standard format for training or evidentiary purposes. Key video clips also can be exported to DVD and played back on commercially available DVD players for court cases and evidentiary analysis purposes.

Id. Motorola's Mobile Video Enforcer product also was in public use by the Sahuarita, Arizona police department at least as early as July 2006. Sahurita cops get high-tech gear, Brian J. Pedersen, Arizona Daily Star, June 15, 2006. "The MDVR, Motorola's Mobile Digital Video Recorder, is an advanced compact digital video recorder that stores video on an internal industrial hard disk drive using industry standard 720 x 480 MPEG2 compression." Specification Sheet MVE Mobile Video Enforcer, [MOTOROLA_011589-MOTOROLA_011592] Motorola Inc., 2004 at 2. "The MDVR is installed in the public safety vehicle and serves as the in-vehicle solution of the Mobile Video Enforcer System." *Id*.



Id. at 1.

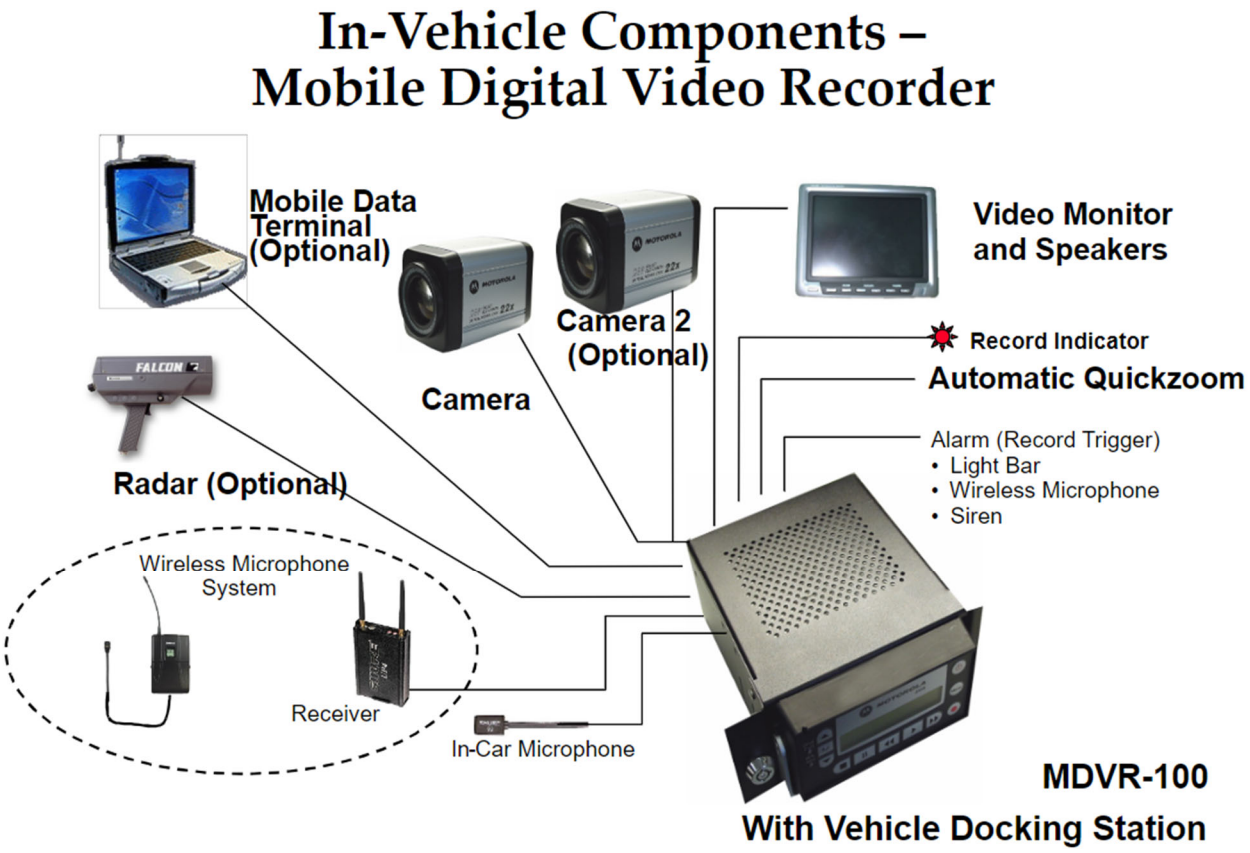
MDVR FEATURES:

- Rugged compact design installs inside vehicle with slide-in docking station
- Dual Camera and radar enabled interface
- Auto iris adjust for nighttime capture of license plates
- Pre-event recording
- Event-triggered recording
- Industry standard connections
- 2 audio inputs for wireless and in-car microphone
- 2 video inputs for dual cameras
- MW800/ML900 sw interface
- 60GB hard drive for 24 hours of recording capacity
- Multi-user sharing and partitioning

Record Modes	Manual / Automatic
	Alarm 1 – Wireless Microphone
	Alarm 2 – Light bar
	Alarm 3 – Siren
	Alarm 4 – Auxiliary

Id. at 2.

PATENT OWNER
Ex 2004



Motorola's Mobile Video Enforcer Mobile Digital Video Recorder MDVR-100 Digital Video Management Solution & License Plate Recognition, Motorola, Inc., [MOTOROLA_011400-MOTOROLA_011419] August 19, 2004 at 18. "As patrol cars make a sweep of the neighborhood, an officer's Mobile Video Enforcer (MVE) in-vehicle camera records the escapee." Video Sharing from Motorola, Motorola, Inc., [MOTOROLA_006335-MOTOROLA_006336] 2006 at 1. "With just one-click, that officer shares the streaming video with other officers who are able to assess the situation in real-time." *Id*.

Ranger digital video recorder

On information and belief, the Ranger digital video recorder was sold or offered for sale by Sequent on or before July 2004. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 10-12. "Sequent's system records

digital video data onto a dedicated computer and hard drive located in the vehicle's trunk." *Id*. at 10.



Id. at 11.

> They park the cars in their motor pool lot, and a 2.4 GHz Wi-Fi access point (one of three at Riverside PD) senses the presence of the car. The system queries the car's server to see if there is video data to offload, and if the data is present, the files are downloaded wirelessly to an assembly server located in a room adjacent to the motor pool. If the download is interrupted by the car moving out of range again, it just resumes when the car comes back again.
>
> ***
>
> Once the video files have been transferred and verified, the assembly server tells the mobile unit to delete the files from its hard drive.
>
> ***
>
> Sgt. Jim Walters at Riverside PD maintains that the process is smooth and requires no intervention by the officer, and that it has yet to lose any video.

Id. "Sequent is routinely transferring an hour of video from cars to the server, wirelessly, in under five minutes." *Id*. at 12.

ICOP Model 20/20

On information and belief, the ICOP Model 20/20 product was sold by ICOP Digital, Inc. and was on sale on or before August 2004. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 16.



Id. at 18.

"It provides up to 60 seconds of pre-event recording (with two cameras recording simultaneously)." *Id*.

> A password-protected flip-down panel conceals a removable hard drive, with capacity up to 20 GB (high resolution full VGA — 640 x 480). The removable hard drive is carried into the station to download the video onto a PC or server through the use of a special hard drive docking station. This vehicle grade hard drive can store 8 - 10 hours of high resolution recording time. The unit comes standard with a color Sony® camera (10x optical zoom / 40x digital zoom) for recording out the front windshield, and one low-light compact rear seat wide-angle camera (also, a third camera, a color Sony camera, is an available option).

Id. at 17. "The ICOP Model 20/20 has a 'Mark' button feature that marks video frames for instant recall of 'GPS' locations for capturing such events as contraband being discarded from a vehicle." *Id*. "The ICOP Model 20/20 allows the officer to enter event classification codes, for easy search and retrieval of files." *Id*.

VisonHawk

On information and belief, the VisonHawk product was sold or offered for sale by International Police Technologies on or before August 2004. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 7.



Id. at 6."Because VisionHawk is a true digital system, it allows for pre-event recording." Special Report: The Patrol Video Project," LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 7. "When the video system is in operation, whether in record mode or not, the system is capturing the output of the camera (and the microphones, if activated) to a solid state memory chip." *Id*.

> Review of recorded segments in the patrol car is much easier than with the tape-based units. Each recorded segment is saved with a file name that includes an identifier for the recorder itself (typically, the vehicle number or radio callsign), and the time and date the recording began. When an officer wishes to review a recording, he brings up the file listing, and locates the segment with the appropriate time and date code. Pressing "play" with that segment selected begins the playback. There is no need to fast-forward or rewind a tape to locate the desired segment, although it might be necessary to do this to get to a desired point within a segment. While the system is playing back a file, it can continue to record. This is not possible with a tape-based system.

PATENT OWNER
Ex 2004

Id. "There are also options to offload the video files via a hard-wired Ethernet connection to the patrol car, or wirelessly via a proprietary form of an 802.11a network." *Id*. "The system's pre-event recording captures up to one minute of video and audioon front and rear cameras." A Second Set of Eyes, Police Magazine, [MOTOROLA_011141-MOTOROLA_011156] April 30, 2005 at 3. "The system records up to 40 hours of video on a40GB drive and thousands of hours of background record time." *Id*. "Two channels record video simultaneously, although the cameras can also beoperated independently of each other." *Id*.

Gemini Digital

On information and belief, the Gemini Digital product was sold or offered for sale by Decatur Electronics, Inc. on or before July 2004. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 16. "Completely housed in a rugged console in the overhead area of a patrol car, the system includes a robust hard drive, digital video recorder, 4.75-inch touchscreen monitor, and a Sony camera." A Second Set of Eyes, Police Magazine, [MOTOROLA_011141-MOTOROLA_011156] April 30, 2005 at 2. "Additional features include automatic deletion settings and PreVu recording for capturing data even before the officer knows it's needed." *Id*. "Gemini in-car equipment can also be used with Decatur's Gemini Evidence Manager (GEM), a solution for efficient archiving and fast searching." *Id*. at 2-3.

Flashback

On information and belief, the Flashback product was sold or offered for sale by L3 Mobile Vision (and predecessors/successors) on or before July 2004. Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 96-97.

> Called the Flashback™, it will use Compact Flash solid state media for recording, instead of hard drives or tapes. This plan virtually eliminates moving parts in the system. Compact Flash media are typically used in digital cameras and music

PATENT OWNER
Ex 2004

players, and have capacities of 2-4 GB or more. Mobile -Vision says this will provide for two to four hours of video at 320x240 resolution. The system has inputs for two cameras, one recording at 30 frames per second, and a second (presumably rear-facing) camera recording at 5 fps. The system will have a pre-event recording capacity of up to one minute.

The system can be placed in record mode by activation of the emergency lights, siren, a manual switch, or when an internal accelerometer detects a crash. The system will use the same two-way VoiceLink Plus wireless microphones used by the VHS system we tested. Transfer of video data is via a wireless 802.11g network, or a hardwired serial, USB 2.0, or Ethernet interface.

Mobile-Vision is also offering a video cataloging product called the Digital In-Car Video Manager. The system provides access and management of video data from any computer on the network, allows searches based on time, date, officer name, keyword, or any other captured metadata, and will permit notes, JPEG images, or documents to be "attached" to the video. The system is scalable to provide for video from one to 1,000 or more cars.

Id. Flashback was a "digital in-car video system based on recording video data onto flash cards" and stores "between 2-4 hours of MPEG-4 video." Business Plan, WatchGuard, March 1, 2004 [MOTOROLA_006339-MOTOROLA_006388] at 25.



Id. "The Flashback system from Mobile-Vision uses solid-state compact flash memory for a more reliable recording media that the company says is virtually indestructible." A Second Set of Eyes, Police Magazine, [MOTOROLA_011141-MOTOROLA_011156] April 30, 2005 at 4. "It offers

pre-event recording, TRACE, advanced MPEG4 compression, and internal GPS." *Id*. at 4-5. "System components include the Nite-Watch camera, which provides optimalnighttime performance." *Id*. at 4.

3200 Series In-Car System

On information and belief, the 3200 Series In-Car System product was sold or offered for sale by Cisco on or before April 30, 2005. A Second Set of Eyes, Police Magazine, [MOTOROLA_011141-MOTOROLA_011156] April 30, 2005 at 2. "The overall 3200 series system provides standards-based connectivity for a wide range of LAN- and WAN-wired or wireless links, including integrated 802.11b/g wireless capabilities." *Id*.

SmartDrive

On information and belief, the SmartDrive product was sold or offered for sale by Smartdrive Systems, Inc. on or before December 8, 2005. *See*, U.S. Pat. No. 10,878,646; SmartDrive scores telematics points, FleetOwner.com, [MOTOROLA_011616-MOTOROLA_011617] May 26, 2006. "The SmartDrive system, explains the company, detects erratic driving and excessive speed and enables driver training and behavioral modification as well as preventive maintenance and diagnostics and crash re-construction all via one seamless, web-based service." SmartDrive scores telematics points, FleetOwner.com, [MOTOROLA_011616-MOTOROLA_011617] May 26, 2006 at 1. A SmartDrive vehicle unit is mounted under the rear-view mirror and consists of two cameras-- one pointing forward, one pointing at the driver." *Id*. "Using the cameras, SmartDrive is continuously recording, so events such as tailgating, swerving, speeding or a collision, are recorded and saved from 15 seconds before the event to 15 seconds after it." *Id*. at 1-2. "The video event is then wirelessly downloaded to the secure Web site where it is reviewed; the driver is counseled and is retrained." SmartDrive Systems Inc. Establishes New National Award for a Fleet Risk/Safety Manager of the Year, government-fleet.com,

PATENT OWNER
Ex 2004

[MOTOROLA_011614-MOTOROLA_011615] October 18, 2006 at 1. "All the video data and diagnostics data can be viewed by fleet/risk/safety managers by logging on to the SmartDrive secure Web site." *Id*. at 2.

> The SmartDrive Managed Services comes complete with the following features to ensure safer driving:
>
> - Video event recorder that captures audio and video of both the driver and what the driver sees.
> - Wireless download of unsafe driving "events".
> - SmartDrive, certified analysts who review unsafe driving "events" daily on behalf of your company for review by your fleetmanagers, providing consistent and objective feedback
> - Bad driving event scoring and feedback delivered daily through easy-to-use, wireless interface on a secure website.
> - Guaranteed, 30% reduction in crashes.
> - Immediate feedback loop via email to your fleet managers indicating any unsafe driving "events".
> - Customer service and technical support 24/7
>
> SmartDrive also offers on-site technical analysis and deployment for the wireless downloading of "events".

Fleet Services, Managed Services: Features, SmartDrive.net, [MOTOROLA_011618-MOTOROLA_011619] Sept. 1, 2006 web capture at 1.

CopCam

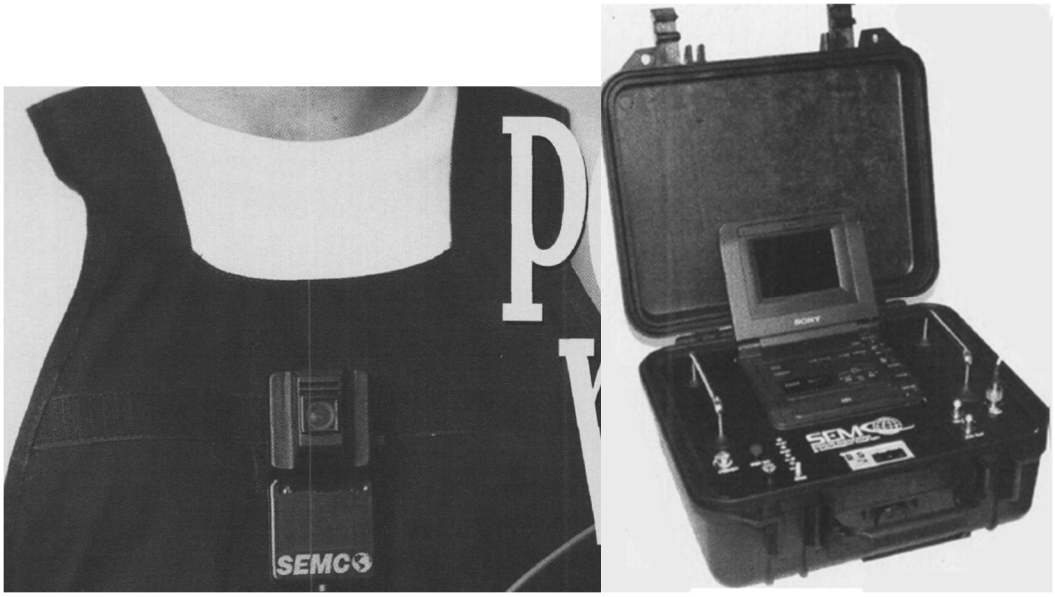
On information and belief, the CopCam product was sold or offered for sale by Semco Corporation (and predecessors/successors) on or before August 1999. POLICE VIDEO Up Close and Personal, LAW and ORDER, [MOTOROLA_011610-MOTOROLA_011613], August 1999 ("Police Video") at 1-2. For example, the CopCam included a body-worn camera that is worn at chest level. *Id*. "CopCam…uses technology developed in military applications. *Id*. at 1. "Semco brought the system to law enforcement with the idea of recording not just a car-mounted view but

PATENT OWNER
Ex 2004

also what the officer was seeing." *Id*. "[T]he in-car video system is actually a combination of two separate video systems that interact with each other." Sheriff Baca Introduces In-Car Video System and "Cop-Cam," County Digest (Country of Los Angeles), [MOTOROLA_011602-MOTOROLA_011609], March 2000 ("Cop-Cam") at 7. "The first is the 'Car-Cam' system, in which the video camera is mounted in the patrol vehicle, taping the incident through the front windshield." *Id*. "The second is the 'CopCam' system, in which the video camera is mounted on the deputy's chest, videotaping the incident from the deputy's viewpoint." *Id*. "When activated, this system has the ability to tape incidents as they happen, regardless of where they occur in relation to the patrol car." *Id*.

"[Sgt. Craig Carter, Escondido, CA Police Department] explained, 'The unit we have has a camera in the car and a camera on the lapel of the officer. The officer can switch between the cameras. The result is, you use the system more often than if it was just in the car. For instance, in a domestic violence situation, you can go into a house and transmit back to the car'" Police Video at 1. "The camera lens is now attached to the lapel of the shirt, and there's a vest with transmitter and battery worn under the shirt." *Id*.

PATENT OWNER
Ex 2004



Id. at 1-2.

> Here's how the new system could work in a real world example. An officer spots a car being operated in an erratic manner. The in-car camera starts to record the driver's actions. As the car stops, the officer taps a button to activate the auto-zoom feature. The unit zooms in, focuses on the vehicle's license plate, and then zooms back out to record the full scene as the officer approaches. … At the driver 's window, the officer can choose to activate his body camera. If he does so , the recording unit in the patrol car automatically switches to receive the signal of the camera worn by the officer. The camera, worn at roughly chest level, records a clear picture of the faces of vehicle occupant s as well as the interior of the car.
>
> Let's assume that the officer obtains consent from the driver to search the car (all recorded on tape) and, as a result, finds a hand gun under the front seat which turns out to be stolen.
>
> ***
>
> The value of this type of information is obvious. "I had a case where I had a consensual search but the suspect later recanted in court" Carter said. "When you can show it on video, it really helps. The same thing applies to traffic tickets. Once I'm at the window, I have a picture of the driver's face and I have a recording of anything he says."

Id. at 2. "If we go into a house looking for a suspect, as in the service of a search warrant, that's different and the videotape can be invaluable." *Id*. at 3.

Longwatch Surveillance System

On information and belief, Longwatch Surveillance System was offered for sale or on sale on or before February 3, 2003 by Longwatch, Inc. Video Process Monitoring, Steve Rubin, automation.com, Feb. 3, 2003. It was also used by the Littleton water department in Littleton, MA and a water plant in Madison, MA as early as February 3, 2003. *Id.*

"[T]he Longwatch Surveillance System™, a portfolio of products that enables SCADA system users to view events and easily verify alarms at local and remote sites using both legacy and new networking infrastructures." *Id.* at 11. "The system integrates video and system alarms on the same display for fast, reliable operation and decision-making." *Id.*

"Figure 1: Video images on the HMI screen at the Littleton water department in Littleton, MA, allow operators to see what's happening in the well house and surrounding area." *Id.* at 9-10.

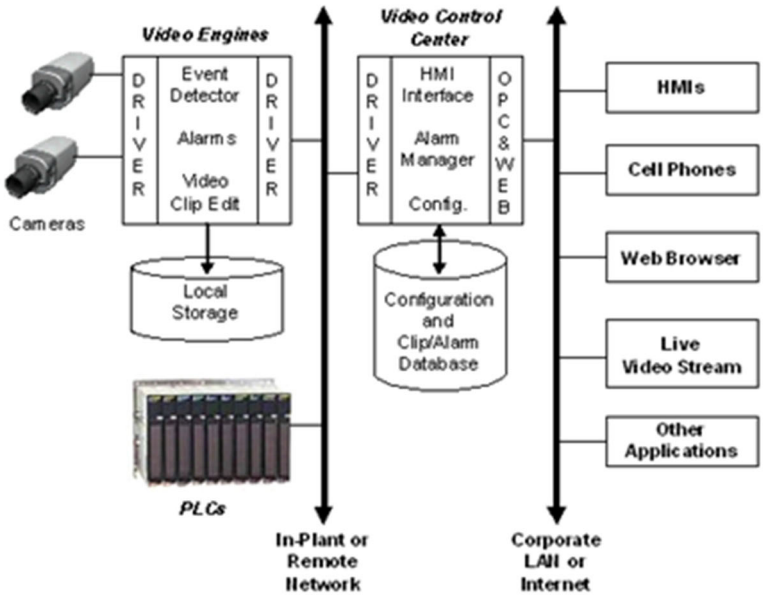


Id. at 9. "Figure 2: An operator at the water plant in Madison, MA, can quickly glance at video images from important areas of the process." *Id*. at 10.



Id. "Figure 3: Diagram shows how cameras transmit data over standard industrial networks to a video processor. The video processor stores the data in a relational database and makes images available to an HMI/SCADA system, DCS, PLC, process historians, web browsers, cellphones and PDAs." *Id*. at 10.

PATENT OWNER
Ex 2004



Id. "A video system can be configured to watch equipment and take video snapshots when certain conditions occur—such as that intermittent problem." *Id*. at 5.

> With proper configuration, a "before" and "after" clip can be generated to help troubleshoot the cause of the problem. In other words, the camera watches the process continuously, and stores video images internally; when an alarm condition occurs, it can transmit a video snapshot of the unit for, say, five minutes before the alarm occurred, and then continue transmitting real-time images for as long as necessary. All the images can be stored for playback and analyzed as many times as necessary.

Id. "Video images can also be transmitted to cell phones or PDAs, so that engineers can diagnose problems from home in the middle of the night." *Id*. at 9.

2. Group 2: U.S. Patent No. 8,310,540

Defendants disclose the following prior art that anticipates and/or renders obvious claim 1 of the '540 patent ("Group 2 Asserted Claim"):

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 7,348,895 ("Lagassey")	USA	Mar. 25, 2008 (filed Nov. 3, 2005).
U.S. 6,167,186 ("Kawasaki")	USA	Dec. 26, 2000 (filed Nov. 5, 1997)

PATENT OWNER
Ex 2004

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 6,624,611 ("Kirmuss"); provisional 60/335,943	USA	Sept. 23, 2003 (filed Aug. 9, 2002); provisional 60/335,943 (filed Oct. 30, 2001)
US 2007/0217761 ("Chen")	USA	Sept. 20, 2007 (filed Mar. 7, 2006)
U.S. 5,982,418 ("Ely")	USA	Nov. 9, 1999 (filed Apr. 22, 1996)
U.S. 6,804,638 ("Fielder")	USA	Feb. 27, 2003 (filed Jun. 20, 2001)
U.S. 10,878,646 ("Plante")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)
US20060077256 ("Silvernail"); provisional 60/709,11	USA	Apr. 13, 2006 (filed Nov. 29, 2005); provisional 60/709,11 (filed Aug. 18, 2005)
U.S. 8,081,214; provisional 60/617,988; US20060158968; WO2006/044476; PCT/US05/36701 ("Vanman")	USA	Jul. 20, 2006 / Apr. 27, 2006 (WO2006/044476) (filed Oct. 12, 2005); provisional 60/617,988 (filed Oct. 12, 2004)
U.S. 7,158,167 ("Yerazunis")	USA	Jan. 2, 2007 (filed Sept. 9, 1998)
U.S. 8,965,175 ("Fiore"); provisional 60/282,162; U.S. 2002/0191952	USA	Dec. 19, 2002 (filed Apr. 9, 2002); provisional 60/282,162 (filed Apr. 9, 2001)
US 2004/0033058 ("Reich"); provisional 60/403,553; provisional 60/409,236; provisional 60/461,674; provisional 60/474.269	USA	Feb. 19, 2004 (filed Aug. 13, 2003); provisional 60/403,553 (filed Aug. 14, 2002); provisional 60/409,236 (filed Sep. 9, 2002); provisional 60/461,674 (filed Apr. 10, 2003); provisional 60/474.269 (filed May 29, 2003)
U.S. 6,163,338 ("Johnson")	USA	Dec. 19, 2000 (filed Aug. 7, 1998)
EP1064783 ("Mann")/ WO99/049656/ U.S. 6,307,526	Europe/PCT/USA	Sept. 30, 1999 (filed Mar. 25, 1998)
U.S. 5,523,799 ("Hattori")	USA	Jun. 4, 1996 (filed Jul. 13, 1994)
U.S. 5,996,023 ("Winter")	USA	Nov. 30, 1999 (filed Apr. 29, 1998)
U.S. 2003/0151663 ("Lorenzetti")	USA	Aug. 14, 2003 (filed Jan. 23, 2002)
U.S. 2002/0131768 ("Gammenthaler 1")	USA	Sept. 19, 2002 (filed Mar. 19, 2001)
U.S. 2004/0201765 ("Gammenthaler 2")	USA	Oct. 14, 2004 (filed Jan. 23, 2002)
U.S. 8,350,907 ("Blanco")	USA	Jan. 8, 2013 (filed Sep. 12, 2003)
U.S. 2004/0008255 ("Lewellen")	USA	Jan. 15, 2004 (filed Jul. 11, 2002)
U.S. 2005/0078195 ("Van Wagner")	USA	Apr. 14, 2005 (filed Oct. 13, 2004)
U.S. 6,995,668 ("Junqua")	USA	Dec. 9, 2004 (filed Jul. 7, 2004)
U.S. 2001/0005217 ("Hamilton")	USA	Jun. 28, 2001 (filed Jan. 10, 2001)
WO2004/036926 ("Pearlson")	PCT/USA	Apr. 29, 2004 (filed Oct. 17, 2003)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 6,690,294 (“Zierden”)	USA	Feb. 10, 2004 (filed Jul. 10, 2001)
U.S. 6,831,556 (“Boykin”)	USA	Dec. 14, 2004 (filed May 16, 2001)
U.S. 6,578,070 (“Weaver”)	USA	Jun. 10, 2003 (filed Jul. 13, 1999)
U.S. 5,465,120 (“Schultheiss”)	USA	Nov. 7, 1995 (filed Feb. 7, 1994)
U.S. Pat. No. 5,845,240; provisional 60/001,402 (“Fielder ’240”)	USA	Dec. 1, 1998 (filed Jul. 24, 1996); provisional 60/001,402 (filed Jul. 24, 1995)
U.S. 4,516,157 (“Campbell”)	USA	May 7, 1985 (filed Oct. 27, 1983)
U.S. 6,614,408 (“Mann”)	USA	Sep. 2, 2003 (filed Mar. 25, 1999)
U.S. 8,482,488 (“Jannard”)	USA	Jun. 22, 2006 (filed Dec. 22, 2004)
U.S. 6,563,532; provisional 60/114,808 (“Strub”)	USA	May 13, 2003 (filed Apr. 21, 2000); provisional 60/114,808 (filed Jan. 5, 1999)
U.S. 6,349,001; provisional 60/064,430 (“Spitzer”)	USA	Feb. 19, 2002 (filed Jan. 11, 2000); provisional 60/064,430 (filed on Oct. 30, 1997)
U.S. 7,806,525; provisional 60/509,631; provisional 60/527.565; provisional 60,562 798; provisional 60/583,169; provisional 60/592,045; provisional 60/605,191; provisional 60/462.591; provisional 60/618,107; provisional 60/620.238; provisional 60/647.836; provisional 60/647,826; provisional 0/725,896; provisional 60/725,999; provisional 60/787,850; provisional 60/846,150 (“Howell”)	USA	Feb. 8, 2007 (filed Oct. 11, 2006); provisional 60/509,631 (filed on Oct. 9, 2003); provisional 60/527,565 (filed on Dec. 8, 2003); provisional 60,562 798 (filed on Apr. 15, 2004); provisional 60/583,169 (filed on Jun. 26, 2004); provisional 60/592,045 (filed on Jul. 28, 2004); provisional 60/605,191 (filed on Aug. 28, 2004); provisional 60/462,591 (filed on Apr. 15, 2003); provisional 60/618,107 (filed on Oct. 12, 2004); provisional 60/620.238 (filed on Oct. 18, 2004); provisional 60/647.836 (filed on Jan. 31, 2005); provisional 60/647,826 (filed on Jan. 31, 2005); provisional 0/725,896 (filed on Oct. 11, 2005); provisional 60/725,999 (filed on Oct. 11, 2005); provisional 60/787,850 (filed on Apr. 1, 2006) provisional 60/846,150 (filed on Sep. 20, 2006)
U.S. 2005/0174470 (“Yamasaki”)	USA	Aug. 11, 2005 (filed Feb. 7, 2005)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 2005/0036103; provisional 60/493,728 ("Bloch")	USA	Feb. 17, 2005 (filed Aug. 10, 2004); provisional 60/493,728 (filed Aug. 11, 2003)
US 7,747,143 ("DeKeyser")	USA	Sep. 19, 2002 (filed Jan. 11, 2002)
WO2004114654A2 ("Armand")	PCT/FR	December 29, 2004
U,S. 6,389,340 ("Rayner")	USA	May 14, 2002 (filed Sep. 24, 1999)
U.S. 6,421,080 ("Lambert")	USA	July 16, 2002 (filed Nov. 5, 1999)
U.S. 6,088,635 ("Cox")	USA	July 11, 2000 (filed Mar. 3, 1999
U.S. 2004/0252193 ("Higgins")	USA	December 16, 2004 (filed Jun. 12, 2003)
U.S. 2005/0088521 ("Blanco 2")	USA	Apr. 28, 2005 (filed Oct. 22, 2003)
U.S. 2004/0150717 ("Page")	USA	Aug. 5, 2004 (filed Sept. 25, 2003)
U.S. 7,088,387 ("Freeman 1")	USA	Aug. 8, 2006 (filed Aug. 5, 1997)
U.S. 2002/005895 ("Freeman 2")	USA	Jan. 17, 2002 (filed Sep. 7, 2001)
U.S. 7,804,426 ("Etcheson")	USA	Sep. 28, 2010 (filed Dec. 4, 2006)
U.S. 8,601,515 ("Sparrell")	USA	Dec. 3, 2013 (filed Dec. 28, 2006)
U.S. 2004/0183912 ("Szolyga")	USA	Sep. 23, 2004 (filed Mar. 21, 2003)
U.S. 2007/0071395 ("Boone")	USA	Mar. 29, 2007 (filed Sep. 8, 2006)
U.S. 2007/0132773 ("Plante 2")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Special Report: The Patrol Video Project	LAW and ORDER	July 2004
DV-1 COMPACT 1-PIECE OVERHEAD SYSTEM (8-Panel Brochure)	WatchGuard Video	September 19, 2005
A Second Set of Eyes	Police Magazine	April 30, 2005
Digital Mobile Witness recording system	Craig Peterson, Law Enforcement Technology, p. 134, www.officer.com	September 2003
WatchGuard Video DV-1 Product	WatchGuard Video	October 6, 2004
WatchGuard DV-1 Product Specifications	WatchGuard Video	November 22, 2004
The Amazing Features of the WatchGuard DV-1	WatchGuard Video	January 20, 2005
WatchGuard DV-1 Graphical User Interface	WatchGuard Video	September 15, 2004
Deja View Now Shipping Camwear 100, World's First Wearable Mini-Camcorder That	Deja View, Inc.	October 19, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Solves The Dogged 'I Missed That Shot' Problem		
Deja View Camwear 100 (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 110-111)	ACM Press	October 15, 2004
Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah	Deja View, Inc.	January 03, 2005
Quick Reference Guide, Camwear Model 100	Deja View, Inc.	2004
Deja View Camewear Model 100 User's Manual	Deja View, Inc.	2004
Police embracing digital video technology	The Associated Press/ The Gainesville Sun	July 8, 2004
Troubleshooting machine maladies	Packaging Digest	October 2002
20/20 Hindsight™ Makes High-Speed Video Available to Everyone	Monitoring Technology Corporation	November 3, 2002
20/20 Hindsight – Hindsight is Always Perfect	Monitoring Technology Corporation	June 28, 2004
Customers	Monitoring Technology Corporation	June 10, 2002
I-Witness Black Box Recorder	Transportation Research Board	
The DriveCam Driver Feedback System Presentation	DriveCam Inc.	February 2003
Installing and Configuring Hindsight 20/20 Software Version 5.1.2	DriveCam Inc.	September 29, 2005
A Fly on The Windshield?	PCT Magazine	April 2003
Eyes on the Road	Occupational Health & Safety	July 2004
introducing a rugged revolution in law enforcement video capture, toughbook arbitrator	Panasonic	January 2005
Toughbook Arbitrator User Manual	Insight Video Net, LLC	March 9, 2005
Business Plan	WatchGuard Video	March 1, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
More Police Installing Motorola Digital Video Cameras in Patrol Vehicles	Motorola, Inc.	May 26, 2005
Specification Sheet MVE Mobile Video Enforcer	Motorola Inc.	2004
Motorola's Mobile Video Enforcer Mobile Digital Video Recorder MDVR-100 Digital Video Management Solution & License Plate Recognition	Motorola, Inc.	August 19, 2004
Video Sharing from Motorola	Motorola, Inc.	2006
SmartDrive scores telematics points	FleetOwner.com	May 26, 2006
SmartDrive Systems Inc. Establishes New National Award for a Fleet Risk/Safety Manager of the Year	government-fleet.com	October 18, 2006
Fleet Services, Managed Services: Features	SmartDrive.net	Sept. 1, 2006
POLICE VIDEO Up Close and Personal	LAW and ORDER	August 1999
Sheriff Baca Introduces In-Car Video System and "Cop-Cam"	County Digest (Country of Los Angeles)	March 2000
"'WearCam' (The wearable camera): personal imaging systems for long-term use in wearable tetherless computer-mediated reality and personal photo/videographic memory prosthesis," from the Digest of Papers, Second International Symposium on Wearable Computers (Cat. No. 98EX215)	IEEE	1998
Augmenting and Sharing Memory with eyeBlog, (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 105-109)	ACM Press	October 15, 2004
Saving What You Missed	https://njbiz.com/	August 9, 2005
A Mobile Phone-Enhanced Remote Surveillance System with	IEEE	2007

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Electric Power Appliance Control and Network Camera Homing		
A Practical Home Security System via Mobile Phones	Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics	May 27-29, 2006
An historical account of the "WearComp" and "WearCam" inventions developed for applications in "Personal Imaging"	IEEE	1997
Remote Video Monitoring Over the WWW	Kluwer Academic Publishers	2003
Video Process Monitoring	Automation.com	February 3, 2003

Defendants disclose additional patents, patent application publications and other publications produced herewith and listed in Exhibit 1 as containing relevant disclosure as prior art. Defendants also disclose the references applied during patent examination, and specifically those that were applied in rejections under § 102 or § 103.

Defendants also contend that the Group 2 Asserted Claim is invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are prior art under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the Group 2 Asserted Claim.

The following lists each system that is now known by Defendants to constitute prior art under 35 U.S.C. §§ 102(a), (b) and/or (g). Defendants contend that the following descriptions and events are stated on information and belief, and are supported by the information and documents that will be produced by Defendants and/or third parties. As discovery is ongoing, Defendants continue to investigate these prior art systems.

PATENT OWNER
Ex 2004

Defendants also reserve the right to rely upon any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein, alone or in combination. Defendants further reserve the right to rely upon any other documents or references describing any such system, knowledge or use.

The following systems, and any other systems identified in these contentions, are prior art under one or more of 35 U.S.C. § 102(a), (b), and (g):

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
Digital Eyewitness	Kustom Signals	On or before Oct. 30, 2001
Digital Mobile Witness	T.A.W. Security Concepts / Charles Kirmuss	On or before September 2003
WatchGuard Video Police In-Car DVD-Video Recorder DV-1 ("DV-1")	WatchGuard Video	Nov. 13, 2004
Deja View Camwear Model 100	Deja View, Inc. / Sid Reich	On or before Oct. 19, 2004
Coban In-Car System - Video Mobile Data Terminal	Coban Research and Technologies Inc. / SafeFleet / IBM / Hung C. Chang / Tyler, Texas Police Department / Texas Department of Public Safety / Yakima, Washington Police Department	On or before July 2004
IBM In-Car Digital Video System	IBM, Yakima, Washington Police Department	On or before May 2003
20/20 Hindsight	Monitoring Technology Corporation / John T. Fiore	On or before Oct. 2002
DriveCam	I-Witness Incorporated / Gary Rayner / Gary Etcheson / DriveCam Inc. / Lytx Inc.	On or before Nov. 2001
Toughbook Arbitrator	Panasonic	On or before Dec. 28, 2004
Digital Patroller (DP-1 and DP-2)	Digital Safety Technologies, Inc. / Integrain / Motorola	On or before Mar. 1, 2004
Mobile Video Enforcer	Motorola	In or before Spring 2005
Ranger digital video recorder	Sequent	On or before Jul. 2004
ICOP Model 20/20	McCoys Lawline / iCop Digital, Inc. / Safety Vision, Inc	On or before Aug. 2004

PATENT OWNER
Ex 2004

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
VisionHawk	International Police Technologies	On or before Jul. 2004
Gemini Digital	Decatur Electronics	On or before Jul. 2004
Flashback	Mobile Vision / L3 Communications / L3 Mobile Vision /Louis Blanco/ Leo Lorenzetti	On or before Oct. 2003
3200 Series In-Car System	Cisco	On or before Apr. 30, 2005
SmartDrive	Smartdrive Systems, Inc. / James Plante	On or before Dec. 8, 2005
CopCam	Semco Corporation	On or before Aug. 1999
Longwatch Surveillance System	Longwatch, Inc. / Steve Rubin	On or before Feb. 3, 2003

Defendants incorporate the descriptions of the prior art systems described above in Section III.A.1.

3. Group 3: U.S. Patent No. 8,928,752

Defendants disclose the following prior art that anticipates and/or renders obvious claim 1 of the '752 patent ("Group 3 Asserted Claim"):

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 7,348,895 ("Lagassey")	USA	Mar. 25, 2008 (filed Nov. 3, 2005).
U.S. 6,167,186 ("Kawasaki")	USA	Dec. 26, 2000 (filed Nov. 5, 1997)
U.S. 6,624,611 ("Kirmuss"); provisional 60/335,943	USA	Sept. 23, 2003 (filed Aug. 9, 2002); provisional 60/335,943 (filed Oct. 30, 2001)
US 2007/0217761 ("Chen")	USA	Sept. 20, 2007 (filed Mar. 7, 2006)
U.S. 5,982,418 ("Ely")	USA	Nov. 9, 1999 (filed Apr. 22, 1996)
U.S. 6,804,638 ("Fielder")	USA	Feb. 27, 2003 (filed Jun. 20, 2001)
U.S. 10,878,646 ("Plante")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)
US20060077256 ("Silvernail"); provisional 60/709,11	USA	Apr. 13, 2006 (filed Nov. 29, 2005); provisional 60/709,11 (filed Aug. 18, 2005)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 8,081,214; provisional 60/617,988; US20060158968; WO2006/044476; PCT/US05/36701 ("Vanman")	USA	Jul. 20, 2006 / Apr. 27, 2006 (WO2006/044476) (filed Oct. 12, 2005); provisional 60/617,988 (filed Oct. 12, 2004)
U.S. 7,158,167 ("Yerazunis")	USA	Jan. 2, 2007 (filed Sept. 9, 1998)
U.S. 8,965,175 ("Fiore"); provisional 60/282,162; U.S. 2002/0191952	USA	Dec. 19, 2002 (filed Apr. 9, 2002); provisional 60/282,162 (filed Apr. 9, 2001)
US 2004/0033058 ("Reich"); provisional 60/403,553; provisional 60/409,236; provisional 60/461,674; provisional 60/474.269	USA	Feb. 19, 2004 (filed Aug. 13, 2003); provisional 60/403,553 (filed Aug. 14, 2002); provisional 60/409,236 (filed Sep. 9, 2002); provisional 60/461,674 (filed Apr. 10, 2003); provisional 60/474.269 (filed May 29, 2003)
U.S. 6,163,338 ("Johnson")	USA	Dec. 19, 2000 (filed Aug. 7, 1998)
EP1064783 ("Mann")/ WO99/049656/ U.S. 6,307,526	Europe/PCT/USA	Sept. 30, 1999 (filed Mar. 25, 1998)
U.S. 5,523,799 ("Hattori")	USA	Jun. 4, 1996 (filed Jul. 13, 1994)
U.S. 5,996,023 ("Winter")	USA	Nov. 30, 1999 (filed Apr. 29, 1998)
U.S. 2003/0151663 ("Lorenzetti")	USA	Aug. 14, 2003 (filed Jan. 23, 2002)
U.S. 2002/0131768 ("Gammenthaler 1")	USA	Sept. 19, 2002 (filed Mar. 19, 2001)
U.S. 2004/0201765 ("Gammenthaler 2")	USA	Oct. 14, 2004 (filed Jan. 23, 2002)
U.S. 8,350,907 ("Blanco")	USA	Jan. 8, 2013 (filed Sep. 12, 2003)
U.S. 2004/0008255 ("Lewellen")	USA	Jan. 15, 2004 (filed Jul. 11, 2002)
U.S. 2005/0078195 ("Van Wagner")	USA	Apr. 14, 2005 (filed Oct. 13, 2004)
U.S. 6,995,668 ("Junqua")	USA	Dec. 9, 2004 (filed Jul. 7, 2004)
U.S. 2001/0005217 ("Hamilton")	USA	Jun. 28, 2001 (filed Jan. 10, 2001)
WO2004/036926 ("Pearlson")	PCT/USA	Apr. 29, 2004 (filed Oct. 17, 2003)
U.S. 6,690,294 ("Zierden")	USA	Feb. 10, 2004 (filed Jul. 10, 2001)
U.S. 6,831,556 ("Boykin")	USA	Dec. 14, 2004 (filed May 16, 2001)
U.S. 6,578,070 ("Weaver")	USA	Jun. 10, 2003 (filed Jul. 13, 1999)
U.S. 5,465,120 ("Schultheiss")	USA	Nov. 7, 1995 (filed Feb. 7, 1994)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. Pat. No. 5,845,240; provisional 60/001,402 ("Fielder '240")	USA	Dec. 1, 1998 (filed Jul. 24, 1996); provisional 60/001,402 (filed Jul. 24, 1995)
U.S. 4,516,157 ("Campbell")	USA	May 7, 1985 (filed Oct. 27, 1983)
U.S. 6,614,408 ("Mann")	USA	Sep. 2, 2003 (filed Mar. 25, 1999)
U.S. 8,482,488 ("Jannard")	USA	Jun. 22, 2006 (filed Dec. 22, 2004)
U.S. 6,563,532; provisional 60/114,808 ("Strub")	USA	May 13, 2003 (filed Apr. 21, 2000); provisional 60/114,808 (filed Jan. 5, 1999)
U.S. 6,349,001; provisional 60/064,430 ("Spitzer")	USA	Feb. 19, 2002 (filed Jan. 11, 2000); provisional 60/064,430 (filed on Oct. 30, 1997)
U.S. 7,806,525; provisional 60/509,631; provisional 60/527.565; provisional 60,562 798; provisional 60/583,169; provisional 60/592,045; provisional 60/605,191; provisional 60/462.591; provisional 60/618,107; provisional 60/620.238; provisional 60/647.836; provisional 60/647,826; provisional 0/725,896; provisional 60/725,999; provisional 60/787,850; provisional 60/846,150 ("Howell")	USA	Feb. 8, 2007 (filed Oct. 11, 2006); provisional 60/509,631 (filed on Oct. 9, 2003); provisional 60/527,565 (filed on Dec. 8, 2003); provisional 60,562 798 (filed on Apr. 15, 2004); provisional 60/583,169 (filed on Jun. 26, 2004); provisional 60/592,045 (filed on Jul. 28, 2004); provisional 60/605,191 (filed on Aug. 28, 2004); provisional 60/462,591 (filed on Apr. 15, 2003); provisional 60/618,107 (filed on Oct. 12, 2004); provisional 60/620.238 (filed on Oct. 18, 2004); provisional 60/647.836 (filed on Jan. 31, 2005); provisional 60/647,826 (filed on Jan. 31, 2005); provisional 0/725,896 (filed on Oct. 11, 2005); provisional 60/725,999 (filed on Oct. 11, 2005); provisional 60/787,850 (filed on Apr. 1, 2006) provisional 60/846,150 (filed on Sep. 20, 2006)
U.S. 2005/0174470 ("Yamasaki")	USA	Aug. 11, 2005 (filed Feb. 7, 2005)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 2005/0036103; provisional 60/493,728 ("Bloch")	USA	Feb. 17, 2005 (filed Aug. 10, 2004); provisional 60/493,728 (filed Aug. 11, 2003)
US 7,747,143 ("DeKeyser")	USA	Sep. 19, 2002 (filed Jan. 11, 2002)
WO2004114654A2 ("Armand")	PCT/FR	December 29, 2004
U,S. 6,389,340 ("Rayner")	USA	May 14, 2002 (filed Sep. 24, 1999)
U.S. 6,421,080 ("Lambert")	USA	July 16, 2002 (filed Nov. 5, 1999)
U.S. 6,088,635 ("Cox")	USA	July 11, 2000 (filed Mar. 3, 1999
U.S. 2004/0252193 ("Higgins")	USA	December 16, 2004 (filed Jun. 12, 2003)
U.S. 2005/0088521 ("Blanco 2")	USA	Apr. 28, 2005 (filed Oct. 22, 2003)
U.S. 2004/0150717 ("Page")	USA	Aug. 5, 2004 (filed Sept. 25, 2003)
U.S. 7,088,387 ("Freeman 1")	USA	Aug. 8, 2006 (filed Aug. 5, 1997)
U.S. 2002/005895 ("Freeman 2")	USA	Jan. 17, 2002 (filed Sep. 7, 2001)
U.S. 7,804,426 ("Etcheson")	USA	Sep. 28, 2010 (filed Dec. 4, 2006)
U.S. 8,601,515 ("Sparrell")	USA	Dec. 3, 2013 (filed Dec. 28, 2006)
U.S. 2004/0183912 ("Szolyga")	USA	Sep. 23, 2004 (filed Mar. 21, 2003)
U.S. 2007/0071395 ("Boone")	USA	Mar. 29, 2007 (filed Sep. 8, 2006)
U.S. 2007/0132773 ("Plante 2")	USA	Jun. 14, 2007 (filed Dec. 8, 2005)

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Special Report: The Patrol Video Project	LAW and ORDER	July 2004
DV-1 COMPACT 1-PIECE OVERHEAD SYSTEM (8-Panel Brochure)	WatchGuard Video	September 19, 2005
A Second Set of Eyes	Police Magazine	April 30, 2005
Digital Mobile Witness recording system	Craig Peterson, Law Enforcement Technology, p. 134, www.officer.com	September 2003
WatchGuard Video DV-1 Product	WatchGuard Video	October 6, 2004
WatchGuard DV-1 Product Specifications	WatchGuard Video	November 22, 2004
The Amazing Features of the WatchGuard DV-1	WatchGuard Video	January 20, 2005

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
WatchGuard DV-1 Graphical User Interface	WatchGuard Video	September 15, 2004
Deja View Now Shipping Camwear 100, World's First Wearable Mini-Camcorder That Solves The Dogged 'I Missed That Shot' Problem	Deja View, Inc.	October 19, 2004
Deja View Camwear 100 (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 110-111)	ACM Press	October 15, 2004
Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah	Deja View, Inc.	January 03, 2005
Quick Reference Guide, Camwear Model 100	Deja View, Inc.	2004
Deja View Camewear Model 100 User's Manual	Deja View, Inc.	2004
Police embracing digital video technology	The Associated Press/ The Gainesville Sun	July 8, 2004
Troubleshooting machine maladies	Packaging Digest	October 2002
20/20 Hindsight™ Makes High-Speed Video Available to Everyone	Monitoring Technology Corporation	November 3, 2002
20/20 Hindsight – Hindsight is Always Perfect	Monitoring Technology Corporation	June 28, 2004
Customers	Monitoring Technology Corporation	June 10, 2002
I-Witness Black Box Recorder	Transportation Research Board	
The DriveCam Driver Feedback System Presentation	DriveCam Inc.	February 2003
Installing and Configuring Hindsight 20/20 Software Version 5.1.2	DriveCam Inc.	September 29, 2005
A Fly on The Windshield?	PCT Magazine	April 2003
Eyes on the Road	Occupational Health & Safety	July 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
introducing a rugged revolution in law enforcement video capture, toughbook arbitrator	Panasonic	January 2005
Toughbook Arbitrator User Manual	Insight Video Net, LLC	March 9, 2005
Business Plan	WatchGuard Video	March 1, 2004
More Police Installing Motorola Digital Video Cameras in Patrol Vehicles	Motorola, Inc.	May 26, 2005
Specification Sheet MVE Mobile Video Enforcer	Motorola Inc.	2004
Motorola's Mobile Video Enforcer Mobile Digital Video Recorder MDVR-100 Digital Video Management Solution & License Plate Recognition	Motorola, Inc.	August 19, 2004
Video Sharing from Motorola	Motorola, Inc.	2006
SmartDrive scores telematics points	FleetOwner.com	May 26, 2006
SmartDrive Systems Inc. Establishes New National Award for a Fleet Risk/Safety Manager of the Year	government-fleet.com	October 18, 2006
Fleet Services, Managed Services: Features	SmartDrive.net	Sept. 1, 2006
POLICE VIDEO Up Close and Personal	LAW and ORDER	August 1999
Sheriff Baca Introduces In-Car Video System and "Cop-Cam"	County Digest (Country of Los Angeles)	March 2000
"'WearCam' (The wearable camera): personal imaging systems for long-term use in wearable tetherless computer-mediated reality and personal photo/videographic memory prosthesis," from the Digest of Papers, Second International Symposium on Wearable Computers (Cat. No. 98EX215)	IEEE	1998
Augmenting and Sharing Memory with eyeBlog, (CARPE '04: Proceedings of the 1st ACM	ACM Press	October 15, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 105-109)		
Saving What You Missed	https://njbiz.com/	August 9, 2005
A Mobile Phone-Enhanced Remote Surveillance System with Electric Power Appliance Control and Network Camera Homing	IEEE	2007
A Practical Home Security System via Mobile Phones	Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics	May 27-29, 2006
An historical account of the "WearComp" and "WearCam" inventions developed for applications in "Personal Imaging"	IEEE	1997
Remote Video Monitoring Over the WWW	Kluwer Academic Publishers	2003
Video Process Monitoring	Automation.com	February 3, 2003

Defendants disclose additional patents, patent application publications and other publications produced herewith and listed in Exhibit 1 as containing relevant disclosure as prior art. Defendants also disclose the references applied during patent examination, and specifically those that were applied in rejections under 102 or 103.

Defendants also contend that the Group 3 Asserted Claim is invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the Group 3 Asserted Claim.

The following lists each system that is now known by Defendants to constitute prior art under 35 U.S.C. §§ 102(a), (b) and/or (g). Defendants contend that the following descriptions and

PATENT OWNER
Ex 2004

events are stated on information and belief, and are supported by the information and documents that will be produced by Defendants and/or third parties. As discovery is ongoing, Defendants continue to investigate these prior art systems.

Defendants also reserve the right to rely upon any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein, alone or in combination. Defendants further reserve the right to rely upon any other documents or references describing any such system, knowledge or use.

The following systems, and any other systems identified in these contentions, are prior art under one or more of 35 U.S.C. § 102(a), (b), and (g):

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
Digital Eyewitness	Kustom Signals	On or before Oct. 30, 2001
Digital Mobile Witness	T.A.W. Security Concepts / Charles Kirmuss	On or before September 2003
WatchGuard Video Police In-Car DVD-Video Recorder DV-1 ("DV-1")	WatchGuard Video	Nov. 13, 2004
Deja View Camwear Model 100	Deja View, Inc. / Sid Reich	On or before Oct. 19, 2004
Coban In-Car System - Video Mobile Data Terminal	Coban Research and Technologies Inc. / SafeFleet / IBM / Hung C. Chang / Tyler, Texas Police Department / Texas Department of Public Safety / Yakima, Washington Police Department	On or before July 2004
IBM In-Car Digital Video System	IBM, Yakima, Washington Police Department	On or before May 2003
20/20 Hindsight	Monitoring Technology Corporation / John T. Fiore	On or before Oct. 2002
DriveCam	I-Witness Incorporated / Gary Rayner / Gary Etcheson / DriveCam Inc. / Lytx Inc.	On or before Nov. 2001
Toughbook Arbitrator	Panasonic	On or before Dec. 28, 2004

PATENT OWNER
Ex 2004

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
Digital Patroller (DP-1 and DP-2)	Digital Safety Technologies, Inc. / Integrain / Motorola	On or before Mar. 1, 2004
Mobile Video Enforcer	Motorola	On or before Spring 2005
Ranger digital video recorder	Sequent	On or before Jul. 2004
ICOP Model 20/20	McCoys Lawline / iCop Digital, Inc. / Safety Vision, Inc	On or before Aug. 2004
VisionHawk	International Police Technologies	On or before Jul. 2004
Gemini Digital	Decatur Electronics	On or before Jul. 2004
Flashback	Mobile Vision / L3 Communications / L3 Mobile Vision / Louis Blanco/ Leo Lorenzetti	On or before Oct. 2003
3200 Series In-Car System	Cisco	On or before Apr. 30, 2005
SmartDrive	Smartdrive Systems, Inc. / James Plante	On or before Dec. 8, 2005
CopCam	Semco Corporation	On or before Aug. 1999
Longwatch Surveillance System	Longwatch, Inc. / Steve Rubin	On or before Feb. 3, 2003

Defendants incorporate the descriptions of the prior art systems described above in Section III.A.1.

4. Group 4: U.S. Patent Nos. 10,523,901 and 10,965,910[3]

Defendants disclose the following prior art that anticipates and/or renders obvious claim 1 of the '901 patent and claim 1 of the '910 patent ("Group 4 Asserted Claims"):

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 7,348,895 ("Lagassey")	USA	Mar. 25, 2008 (filed Nov. 3, 2005).
U.S. 6,167,186 ("Kawasaki")	USA	Dec. 26, 2000 (filed Nov. 5, 1997)
U.S. 6,624,611 ("Kirmuss"); provisional 60/335,943	USA	Sept. 23, 2003 (filed Aug. 9, 2002); provisional

[3] Given the overlap in claim limitations between the '901 patent and '910 patent, and to avoid unnecessary repetition, asserted claims for these patents are addressed and charted together.

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
		60/335,943 (filed Oct. 30, 2001)
US 2007/0217761 (“Chen”)	USA	Sept. 20, 2007 (filed Mar. 7, 2006)
U.S. 5,982,418 (“Ely”)	USA	Nov. 9, 1999 (filed Apr. 22, 1996)
U.S. 6,804,638 (“Fielder”)	USA	Feb. 27, 2003 (filed Jun. 20, 2001)
U.S. 10,878,646 (“Plante”)	USA	Jun. 14, 2007 (filed Dec. 8, 2005)
US20060077256 (“Silvernail”); provisional 60/709,11	USA	Apr. 13, 2006 (filed Nov. 29, 2005); provisional 60/709,11 (filed Aug. 18, 2005)
U.S. 8,081,214; provisional 60/617,988; US20060158968; WO2006/044476; PCT/US05/36701 (“Vanman”)	USA	Jul. 20, 2006 / Apr. 27, 2006 (WO2006/044476) (filed Oct. 12, 2005); provisional 60/617,988 (filed Oct. 12, 2004)
U.S. 7,158,167 (“Yerazunis”)	USA	Jan. 2, 2007 (filed Sept. 9, 1998)
U.S. 8,965,175 (“Fiore”); provisional 60/282,162; U.S. 2002/0191952	USA	Dec. 19, 2002 (filed Apr. 9, 2002); provisional 60/282,162 (filed Apr. 9, 2001)
US 2004/0033058 (“Reich”); provisional 60/403,553; provisional 60/409,236; provisional 60/461,674; provisional 60/474.269	USA	Feb. 19, 2004 (filed Aug. 13, 2003); provisional 60/403,553 (filed Aug. 14, 2002); provisional 60/409,236 (filed Sep. 9, 2002); provisional 60/461,674 (filed Apr. 10, 2003); provisional 60/474.269 (filed May 29, 2003)
U.S. 6,163,338 (“Johnson”)	USA	Dec. 19, 2000 (filed Aug. 7, 1998)
EP1064783 (“Mann”)/ WO99/049656/ U.S. 6,307,526	Europe/PCT/USA	Sept. 30, 1999 (filed Mar. 25, 1998)
U.S. 5,523,799 (“Hattori”)	USA	Jun. 4, 1996 (filed Jul. 13, 1994)
U.S. 5,996,023 (“Winter”)	USA	Nov. 30, 1999 (filed Apr. 29, 1998)
U.S. 2003/0151663 (“Lorenzetti”)	USA	Aug. 14, 2003 (filed Jan. 23, 2002)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 2002/0131768 ("Gammenthaler 1")	USA	Sept. 19, 2002 (filed Mar. 19, 2001)
U.S. 2004/0201765 ("Gammenthaler 2")	USA	Oct. 14, 2004 (filed Jan. 23, 2002)
U.S. 8,350,907 ("Blanco")	USA	Jan. 8, 2013 (filed Sep. 12, 2003)
U.S. 2004/0008255 ("Lewellen")	USA	Jan. 15, 2004 (filed Jul. 11, 2002)
U.S. 2005/0078195 ("Van Wagner")	USA	Apr. 14, 2005 (filed Oct. 13, 2004)
U.S. 6,995,668 ("Junqua")	USA	Dec. 9, 2004 (filed Jul. 7, 2004)
U.S. 2001/0005217 ("Hamilton")	USA	Jun. 28, 2001 (filed Jan. 10, 2001)
WO2004/036926 ("Pearlson")	PCT/USA	Apr. 29, 2004 (filed Oct. 17, 2003)
U.S. 6,690,294 ("Zierden")	USA	Feb. 10, 2004 (filed Jul. 10, 2001)
U.S. 6,831,556 ("Boykin")	USA	Dec. 14, 2004 (filed May 16, 2001)
U.S. 6,578,070 ("Weaver")	USA	Jun. 10, 2003 (filed Jul. 13, 1999)
U.S. 5,465,120 ("Schultheiss")	USA	Nov. 7, 1995 (filed Feb. 7, 1994)
U.S. Pat. No. 5,845,240; provisional 60/001,402 ("Fielder '240")	USA	Dec. 1, 1998 (filed Jul. 24, 1996); provisional 60/001,402 (filed Jul. 24, 1995)
U.S. 4,516,157 ("Campbell")	USA	May 7, 1985 (filed Oct. 27, 1983)
U.S. 6,614,408 ("Mann")	USA	Sep. 2, 2003 (filed Mar. 25, 1999)
U.S. 8,482,488 ("Jannard")	USA	Jun. 22, 2006 (filed Dec. 22, 2004)
U.S. 6,563,532; provisional 60/114,808 ("Strub")	USA	May 13, 2003 (filed Apr. 21, 2000); provisional 60/114,808 (filed Jan. 5, 1999)
U.S. 6,349,001; provisional 60/064,430 ("Spitzer")	USA	Feb. 19, 2002 (filed Jan. 11, 2000); provisional 60/064,430 (filed on Oct. 30, 1997)
U.S. 7,806,525; provisional 60/509,631; provisional	USA	Feb. 8, 2007 (filed Oct. 11, 2006); provisional

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
60/527.565; provisional 60,562 798; provisional 60/583,169; provisional 60/592,045; provisional 60/605,191; provisional 60/462.591; provisional 60/618,107; provisional 60/620.238; provisional 60/647.836; provisional 60/647,826; provisional 0/725,896; provisional 60/725,999; provisional 60/787,850; provisional 60/846,150 ("Howell")		60/509,631 (filed on Oct. 9, 2003); provisional 60/527,565 (filed on Dec. 8, 2003); provisional 60,562 798 (filed on Apr. 15, 2004); provisional 60/583,169 (filed on Jun. 26, 2004); provisional 60/592,045 (filed on Jul. 28, 2004); provisional 60/605,191 (filed on Aug. 28, 2004); provisional 60/462,591 (filed on Apr. 15, 2003); provisional 60/618,107 (filed on Oct. 12, 2004); provisional 60/620.238 (filed on Oct. 18, 2004); provisional 60/647.836 (filed on Jan. 31, 2005); provisional 60/647,826 (filed on Jan. 31, 2005); provisional 0/725,896 (filed on Oct. 11, 2005); provisional 60/725,999 (filed on Oct. 11, 2005); provisional 60/787,850 (filed on Apr. 1, 2006) provisional 60/846,150 (filed on Sep. 20, 2006)
U.S. 2005/0174470 ("Yamasaki")	USA	Aug. 11, 2005 (filed Feb. 7, 2005)
U.S. 2005/0036103; provisional 60/493,728 ("Bloch")	USA	Feb. 17, 2005 (filed Aug. 10, 2004); provisional 60/493,728 (filed Aug. 11, 2003)
US 7,747,143 ("DeKeyser")	USA	Sep. 19, 2002 (filed Jan. 11, 2002)
WO2004114654A2 ("Armand")	PCT/FR	December 29, 2004
U,S. 6,389,340 ("Rayner")	USA	May 14, 2002 (filed Sep. 24, 1999)
U.S. 6,421,080 ("Lambert")	USA	July 16, 2002 (filed Nov. 5, 1999)
U.S. 6,088,635 ("Cox")	USA	July 11, 2000 (filed Mar. 3, 1999
U.S. 2004/0252193 ("Higgins")	USA	December 16, 2004 (filed Jun. 12, 2003)

Patents and Patent Publications		
Patent or Publication No.	**Country of Origin**	**Date of Publication or Issue**
U.S. 2005/0088521 (“Blanco 2”)	USA	Apr. 28, 2005 (filed Oct. 22, 2003)
U.S. 2004/0150717 (“Page”)	USA	Aug. 5, 2004 (filed Sept. 25, 2003)
U.S. 7,088,387 (“Freeman 1”)	USA	Aug. 8, 2006 (filed Aug. 5, 1997)
U.S. 2002/005895 (“Freeman 2”)	USA	Jan. 17, 2002 (filed Sep. 7, 2001)
U.S. 7,804,426 (“Etcheson”)	USA	Sep. 28, 2010 (filed Dec. 4, 2006)
U.S. 8,601,515 (“Sparrell”)	USA	Dec. 3, 2013 (filed Dec. 28, 2006)
U.S. 2004/0183912 (“Szolyga”)	USA	Sep. 23, 2004 (filed Mar. 21, 2003)
U.S. 2007/0071395 (“Boone”)	USA	Mar. 29, 2007 (filed Sep. 8, 2006)
U.S. 2007/0132773 (“Plante 2”)	USA	Jun. 14, 2007 (filed Dec. 8, 2005)

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Special Report: The Patrol Video Project	LAW and ORDER	July 2004
DV-1 COMPACT 1-PIECE OVERHEAD SYSTEM (8-Panel Brochure)	WatchGuard Video	September 19, 2005
A Second Set of Eyes	Police Magazine	April 30, 2005
Digital Mobile Witness recording system	Craig Peterson, Law Enforcement Technology, p. 134, www.officer.com	September 2003
WatchGuard Video DV-1 Product	WatchGuard Video	October 6, 2004
WatchGuard DV-1 Product Specifications	WatchGuard Video	November 22, 2004
The Amazing Features of the WatchGuard DV-1	WatchGuard Video	January 20, 2005
WatchGuard DV-1 Graphical User Interface	WatchGuard Video	September 15, 2004
Deja View Now Shipping Camwear 100, World’s First Wearable Mini-Camcorder That Solves The Dogged 'I Missed That Shot' Problem	Deja View, Inc.	October 19, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Deja View Camwear 100 (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 110-111)	ACM Press	October 15, 2004
Deja View's Camwear 100 to be Embedded With 1st Cavalry in Fallujah	Deja View, Inc.	January 03, 2005
Quick Reference Guide, Camwear Model 100	Deja View, Inc.	2004
Deja View Camewear Model 100 User's Manual	Deja View, Inc.	2004
Police embracing digital video technology	The Associated Press/ The Gainesville Sun	July 8, 2004
Troubleshooting machine maladies	Packaging Digest	October 2002
20/20 Hindsight™ Makes High-Speed Video Available to Everyone	Monitoring Technology Corporation	November 3, 2002
20/20 Hindsight – Hindsight is Always Perfect	Monitoring Technology Corporation	June 28, 2004
Customers	Monitoring Technology Corporation	June 10, 2002
I-Witness Black Box Recorder	Transportation Research Board	
The DriveCam Driver Feedback System Presentation	DriveCam Inc.	February 2003
Installing and Configuring Hindsight 20/20 Software Version 5.1.2	DriveCam Inc.	September 29, 2005
A Fly on The Windshield?	PCT Magazine	April 2003
Eyes on the Road	Occupational Health & Safety	July 2004
introducing a rugged revolution in law enforcement video capture, toughbook arbitrator	Panasonic	January 2005
Toughbook Arbitrator User Manual	Insight Video Net, LLC	March 9, 2005
Business Plan	WatchGuard Video	March 1, 2004
More Police Installing Motorola Digital Video Cameras in Patrol Vehicles	Motorola, Inc.	May 26, 2005
Specification Sheet MVE Mobile Video Enforcer	Motorola Inc.	2004
Motorola's Mobile Video Enforcer Mobile Digital Video Recorder MDVR-100 Digital Video	Motorola, Inc.	August 19, 2004

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
Management Solution & License Plate Recognition		
Video Sharing from Motorola	Motorola, Inc.	2006
SmartDrive scores telematics points	FleetOwner.com	May 26, 2006
SmartDrive Systems Inc. Establishes New National Award for a Fleet Risk/Safety Manager of the Year	government-fleet.com	October 18, 2006
Fleet Services, Managed Services: Features	SmartDrive.net	Sept. 1, 2006
POLICE VIDEO Up Close and Personal	LAW and ORDER	August 1999
Sheriff Baca Introduces In-Car Video System and "Cop-Cam"	County Digest (Country of Los Angeles)	March 2000
"'WearCam' (The wearable camera): personal imaging systems for long-term use in wearable tetherless computer-mediated reality and personal photo/videographic memory prosthesis," from the Digest of Papers, Second International Symposium on Wearable Computers (Cat. No. 98EX215)	IEEE	1998
Augmenting and Sharing Memory with eyeBlog, (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 105-109)	ACM Press	October 15, 2004
Saving What You Missed	https://njbiz.com/	August 9, 2005
A Mobile Phone-Enhanced Remote Surveillance System with Electric Power Appliance Control and Network Camera Homing	IEEE	2007
A Practical Home Security System via Mobile Phones	Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics	May 27-29, 2006
An historical account of the "WearComp" and "WearCam"	IEEE	1997

Other Printed Publications		
Title	**Author/Publisher**	**Date of Publication**
inventions developed for applications in "Personal Imaging"		
Remote Video Monitoring Over the WWW	Kluwer Academic Publishers	2003
Video Process Monitoring	Automation.com	February 3, 2003

Defendants disclose additional patents, patent application publications and other publications produced herewith and listed in Exhibit 1 as containing relevant disclosure as prior art. Defendants also disclose the references applied during patent examination, and specifically those that were applied in rejections under 102 or 103.

Defendants also contend that the Group 4 Asserted Claims are invalid in view of public knowledge and uses and/or offers for sale or sales of products and services that are under 35 U.S.C. § 102(a) and/or 35 U.S.C. § 102(b) and/or prior inventions made in this country by other inventors who had not abandoned, suppressed, or concealed them under 35 U.S.C. § 102(g), and that anticipate or render obvious the Group 4 Asserted Claims.

The following lists each system that is now known by Defendants to constitute prior art under 35 U.S.C. §§ 102(a), (b) and/or (g). Defendants contend that the following descriptions and events are stated on information and belief, and are supported by the information and documents that will be produced by Defendants and/or third parties. As discovery is ongoing, Defendants continue to investigate these prior art systems.

Defendants also reserve the right to rely upon any system, public knowledge or use embodying or otherwise incorporating any of the prior art disclosed herein, alone or in combination. Defendants further reserve the right to rely upon any other documents or references describing any such system, knowledge or use.

PATENT OWNER
Ex 2004

The following systems, and any other systems identified in these contentions, are prior art under one or more of 35 U.S.C. § 102(a), (b), and (g):

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
Digital Eyewitness	Kustom Signals	On or before Oct. 30, 2001
Digital Mobile Witness	T.A.W. Security Concepts / Charles Kirmuss	On or before September 2003
WatchGuard Video Police In-Car DVD-Video Recorder DV-1 ("DV-1")	WatchGuard Video	Nov. 13, 2004
Deja View Camwear Model 100	Deja View, Inc. / Sid Reich	On or before Oct. 19, 2004
Coban In-Car System - Video Mobile Data Terminal	Coban Research and Technologies Inc. / SafeFleet / IBM / Hung C. Chang / Tyler, Texas Police Department / Texas Department of Public Safety / Yakima, Washington Police Department	On or before July 2004
IBM In-Car Digital Video System	IBM, Yakima, Washington Police Department	On or before May 2003
20/20 Hindsight	Monitoring Technology Corporation / John T. Fiore	On or before Oct. 2002
DriveCam	I-Witness Incorporated / Gary Rayner / Gary Etcheson / DriveCam Inc. / Lytx Inc.	On or before Nov. 2001
Toughbook Arbitrator	Panasonic	On or before Dec. 28, 2004
Digital Patroller (DP-1 and DP-2)	Digital Safety Technologies, Inc. / Integrain / Motorola	On or before Mar. 1, 2004
Mobile Video Enforcer	Motorola	In or before Spring 2005
Ranger digital video recorder	Sequent	On or before Jul. 2004
ICOP Model 20/20	McCoys Lawline / iCop Digital, Inc. / Safety Vision, Inc	On or before Aug. 2004
VisionHawk	International Police Technologies	On or before Jul. 2004
Gemini Digital	Decatur Electronics	On or before Jul. 2004
Flashback	Mobile Vision / L3 Communications L3 Mobile Vision / Louis Blanco/ Leo Lorenzetti	On or before Oct. 2003
3200 Series In-Car System	Cisco	On or before Apr. 30, 2005

PATENT OWNER
Ex 2004

Prior Art Systems		
Product	**Entity**	**Offer for Sale or Public Use Date**
SmartDrive	Smartdrive Systems, Inc. / James Plante	On or before Dec. 8, 2005
CopCam	Semco Corporation	On or before Aug. 1999
Longwatch Surveillance System	Longwatch, Inc. / Steve Rubin	On or before Feb. 3, 2003

Defendants incorporate the descriptions of the prior art systems described above in Section III.A.1.

B. P.R. 3-3(b) Disclosures: Each Item of Prior Art that Anticipates and/or Renders Obvious the Asserted Claim, and Obviousness Combinations and Motivations to Combine

Based on presently known information and the apparent constructions Plaintiff is asserting in its Infringement Contentions, the prior art references identified above anticipate the Asserted Claims and/or, alone or in combination with the knowledge of a person of ordinary skill in the art, or what was already known in the art, render the Asserted Claims obvious. To the extent Plaintiff asserts that any of the prior art references charted in Exhibits A-1 through M-4 fail to explicitly or inherently disclose any element of the Asserted Claims, Defendants contend that it would have been obvious to modify such reference to include the allegedly missing element, in view of the knowledge of one of ordinary skill in the art, the admitted prior art of the Asserted Patents, and/or in combination with any of the other prior art references identified in the Exhibits or herein for that respective patent. To the extent Plaintiff contends that any primary reference does not anticipate the Asserted Claims, it would have been obvious to combine or modify the primary references with concepts from other prior art, as explained herein.

In particular, for each limitation of the Asserted Claims that Plaintiff contends is not met by a particular primary reference, Defendants contend that the limitation (and claim as a whole) is obvious based on a combination of that particular primary reference with (1) any other reference

PATENT OWNER
Ex 2004

as identified in Exhibits A-1 through M-4 or herein as disclosing that limitation, (2) any admitted prior art, as explained in the background of each patent or discussed in the file history, and/or (3) the knowledge of a person of ordinary skill in the art including any of the references and concepts discussed herein regarding the relevant background and state of the art. Defendants' obviousness grounds for each dependent claim incorporate the obviousness grounds for the claim(s) from which the dependent claim depends in addition to any obviousness grounds identified in the charts for the dependent claim.

Defendants do not yet have the benefit of Plaintiff's positions on the prior art, including what (if any) elements it contends are missing in each prior art reference, whether Plaintiff agrees that a reference is in fact prior art, and whether Plaintiff agrees that a person of ordinary skill in the art would be motivated to combine specific references. Defendants reserve the right to supplement these obviousness positions (including identifying additional prior art combinations and the associated reasons to combine) as discovery in the case progresses, including third party discovery and expert discovery.

Consistent with the Supreme Court's decision in *KSR Int'l, Co. v. Teleflex, Inc.*, 172 S. Ct. 1727 (2007), a patent claim is invalid under 35 U.S.C. 103 if the differences between the subject matter claimed and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art ("POSA"). In this regard, a combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results. When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, and if a person of ordinary skill can implement a predictable variation, the patent statute likely bars its patentability. A court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions. In this analysis, often, it will be necessary to

PATENT OWNER
Ex 2004

look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue. But the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.

In considering obviousness, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed. The proper inquiry is whether a designer of ordinary skill, facing the wide range of needs created by developments in the field of endeavor, would have seen a benefit of combining prior art elements. When there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense. In that instance the fact that a combination was obvious to try might show that it was obvious under the patent laws. Indeed, common sense teaches that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents or other prior art references together like pieces of a puzzle.

The sources of information for an obviousness analysis can include: market forces; design incentives; the interrelated teachings of multiple patents; any need or problem known in the field of endeavor at the time of the invention addressed by the patent; and the background knowledge, creativity and common sense of the person of ordinary skill. An analysis of obviousness can

PATENT OWNER
Ex 2004

include recourse to logic, judgment and common sense available to the person of ordinary skill that do not necessarily require explication in any reference.

Here, the suggestion or motivation to combine prior art references is provided by the explicit and implicit teachings of the cited references themselves, the knowledge of one of ordinary skill in the art, and/or the nature of the problem(s) purportedly being solved.

1. Background and State of the Art

Defendants set forth below a summary of its current understanding of the state of the art as understood as of the asserted priority dates of the Asserted Patents for the general subject matter of each of the Asserted Patents. The information discussed in this section may have formed the background knowledge of a person of ordinary skill in the art at the time the Asserted Patents were filed and may have been used in determining whether and how to combine references to achieve the claimed inventions. *See Randall Mfg. v. Rea,* 733 F.3d 1355, 1362 (Fed. Cir. 2013) (stating that "the knowledge [of a person of ordinary skill in the art] is part of the store of public knowledge that must be consulted when considering whether a claimed invention would have been obvious"). Defendants expressly reserve the right to rely on each of the prior art references, systems, concepts, and technologies discussed in this Section with respect to each of the Asserted Patents.

State Of The Art and Admitted Prior Art – Patent Specifications

'540 Patent

The '540 patent specification states that "[t]he field of the invention is in digital recording." '540 patent at 1:9. Before describing the alleged invention, the '540 patent specification provides a description of the admitted state of the prior art in the following "BACKGROUND":

> Conventional camcorders use a variety of disk formats such as digital video cassettes, mini-DV cassettes and DVD-R discs that offer a limited amount of memory to store data. One of the major shortcomings of the existing camcorder technology is that the memory runs out too soon. How many times does one hear, "I have no tape left" while recording? Once a portion of the memory has been

PATENT OWNER
Ex 2004

> recorded, there is less memory available for further recording. Then when the memory is full, users have to return to their home/work computer or media station to transfer the recorded data from the camera to free up the memory. This creates inconvenience and inflexibility for recording on the go.
>
> One solution is the technology of loop recording in which the camera is constantly recording. When it reaches the end of the memory it records from the beginning, erasing the earliest recorded data. Such technology is often employed with surveillance cameras for long and continuous recording without much or any supervision. However, the problem with such loop recording is that it will not distinguish or differentiate any data that is of importance. The user then will have to transfer the interested data to another storage media by stopping the recording and storing the interested data onto another medium, or risk having the interested data be recorded over during loop recording.
>
> Many surveillance recordings employ larger memory units to solve this problem. This then creates unnecessary long recordings that are not relevant or present any interest to the user. The portions of the interested data not only take up available memory for further recording but the entire loop has to be reviewed in order to select the most relevant portion. Again, this creates inconvenience and inflexibility for recording on the go.
>
> Furthermore, users of the surveillance camera are not able to edit a given potion on the fly without stopping and replaying the image. The user must focus his or her attention on the viewfinder or display screen to keep the subject properly framed. This seriously hinders the operator's live enjoyment of the event being recorded since their attention is on the recording device and is not immersed in the sights and sounds of the event.

Id. at 1:13-52. The '540 patent alleges "there is still a need for a camera that provides better recording and editing functions." *Id*. at 1:53-54.

'752 Patent

The '752 patent specification states that "[t]he field of the invention is surveillance cameras." '752 patent at 1:9. Before describing the alleged invention, the 752 patent specification provides a description of the admitted state of the prior art in the following "BACKGROUND":

> It is often desirable to record an unexpected event (automobile accident, baseball hit, quick kiss, facial expression, etc.), but by the time someone pulls out a camera and focuses on the target, the moment is gone. This problem has long been addressed in the surveillance industry by recording continuously for long periods of time. It is not unusual, for example, for banks or other secure facilities to capture and maintain day after day of surveillance tapes. The downside, of course, is that

PATENT OWNER
Ex 2004

continuous recordings are costly in terms of equipment, storage, bulkiness, and so forth. Moreover, continuous recording is especially unsuitable for small recording devices such as those carried on eyeglasses.

U.S. Pat. No. 6,163,338 to Johnson et al. (December 2000) focused on the problem of filming automobile accidents. Instead of trying to record millions of frames over long periods of time, Johnson tried to solve the problem by continuously storing the most recent images in a small looping (circular) memory. Upon actuation of a trigger, the system protects the most recently used portion of the memory, and overwrites an older portion. Thus, upon receiving a trigger signal from an accident, a 30 second memory might end up storing 20 seconds before and 10 seconds after the accident.

A looping memory of a device according to Johnson is depicted in prior art FIG. 1. There a small looping memory 11 records frames or other data from a data stream "A". Each character initiates a small time period, perhaps five seconds, with the "|" character designating the current writing position. When the memory finishes writing to the last position, it returns to the first position and over-writes previously stored data. Upon receipt of a start signal (such as by actuation of a trigger), the memory continues looping for some period of time (corresponding to perhaps a third of the memory capacity), and then stops recording altogether. The recorded memory is protected until it is offloaded or reset.

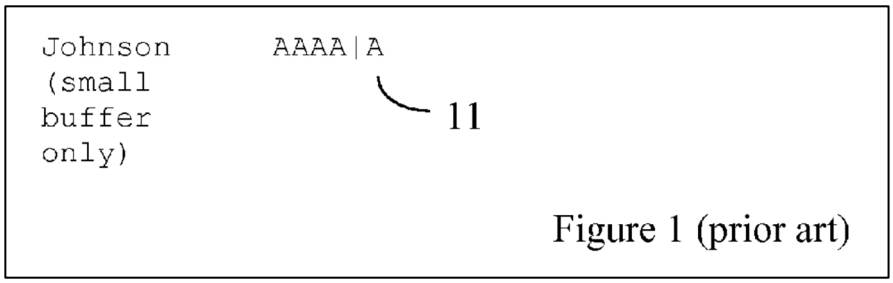
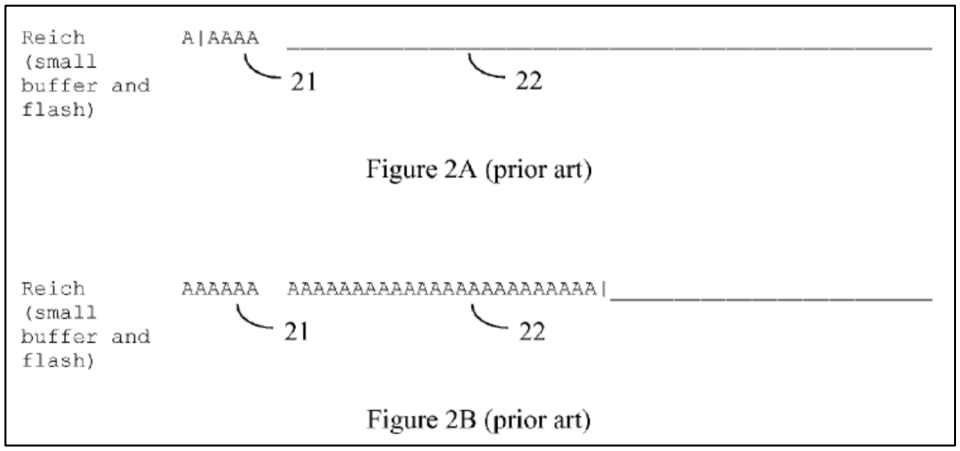


Figure 1 (prior art)

US 2004/0033058 to Reich et al. (publ. February 2004) contemplates an improvement that tries to solve that problem by using two different memories, a small (900 frame) looping buffer and a larger flash memory. In Reich, the trigger signal (record button) causes the buffer to be completely filled, and then additional images to be written to the flash memory until a stop button is pushed.

The Reich system is depicted in prior art FIGS. 2A-2B. In FIG. 2A, a small looping buffer 21 records data from data stream "A", with the current position marked with "|". The "_" character is used to initiate memory that has not been used, or has been used but has been marked for overwriting. In FIG. 2B, a start signal has been received, and the system responded by filling the buffer, and then starting to fill a flash memory 22. Regardless of whether the flash memory is eventually filled, both the buffer 21 and the flash memory 22 are effectively locked (protected) upon receipt of a stop signal.

PATENT OWNER
Ex 2004



Id. at 1:13-2:4; FIGS. 1, 2A-2B.

The '752 specification further describes the purported problem with the prior art Johnson and Reich references as follows:

> From FIGS. 1 and 2A-2B, one can readily appreciate that both Johnson and Reich can accommodate only a single time period. A user cannot record a second event without overwriting or offloading the stored data from a first event. In addition, both Johnson and Reich still contemplate that the looping portion memory should be very small, perhaps 30 seconds or less. Such devices are completely inadequate for storing long pre-start signal images, such as a five or ten minute period prior to a trigger signal.

Id. at 2:5-13. The '752 patent specification alleges that "there is still a need for improvements in cameras and other surveillance devices that allow recordation of multiple events without overwriting or offloading, and that can include lengthy portions of data streams prior to start signal events." 2:14-17.

'034 Patent (And Continuations)

The '034 patent specification (and related continuation patents) states that "[t]he field of the invention is video camera recording technology." '034 patent at 1:19-20. Before describing the alleged invention, the '752 patent specification provides a description of the admitted state of the prior art in the following "BACKGROUND":

PATENT OWNER
Ex 2004

> Conventional camcorders use a variety of storage formats including digital video cassettes, mini-DV cassettes, or DVD-R discs that offer a limited amount of memory to store data. One of the major shortcomings of the existing camcorder technology is that the memory runs out too soon. Once a portion of the memory has been recorded, there is less memory available for further recording. Then when the memory is full, users have to return to their home/work computer or media station to transfer the recorded data from the camera to free up the memory. This creates inconvenience and inflexibility for recording on the go.
>
> WO 2006/044476 to Vanman describes an electronic camera mounted to a police vehicle with a circular buffer that is constantly recording. When the camera reaches the end of the memory it records from the beginning of memory, erasing the earliest recorded data. Such technology is often employed with surveillance cameras for long and continuous recording with little or no supervision. However, Vanman does not distinguish or differentiate any data that is of importance. To save data in the buffer, the user of the Vanman device needs to transfer important portions of the buffer wirelessly to a central office or physically to a DVD disc, or else risk having the interesting data be recorded over during loop recording. Such transfers are processor intensive and may not be possible when the central office is out of range or an empty DVD disc is unavailable.

Id. at 1:24-41. The '034 patent specification alleges, however, that:

> Vanman does not distinguish or differentiate any data that is of importance. To save data in the buffer, the user of the Vanman device needs to transfer important portions of the buffer wirelessly to a central office or physically to a DVD disc, or else risk having the interesting data be recorded over during loop recording. Such transfers are processor intensive and may not be possible when the central office is out of range or an empty DVD disc is unavailable.

Id. at 1:41-49. The '034 patent specification further describes the admitted state of the prior art as follows:

> EP 1064783 to Mann describes a camera mountable to a pair of eyeglasses that continuously saves recorded images to a circular buffer in a computer on the user's waist. When a user wants to save a piece of recorded video, the user must stop recording and offload the data at another location before the user can record again. Mann also discusses streaming the images directly to a wireless memory that may have a larger capacity; however, this means that the camera does not work in the absence of a wireless connection.
>
> U.S. Pat. No. 5,523,799 to Hattori et al. also describes storing data in a memory having an archival portion. However, Hattori fails to address sending data to a remote memory.

PATENT OWNER
Ex 2004

Id. at 1:56-67. The '034 patent specification alleges that "there is still a need for a recording camera that provides better recording and editing functions." *Id*. at 2:1-2.

State Of The Art and Admitted Prior Art – Prosecution File Histories

During the prosecution of U.S. Patent Application No. 12/268,286, the applicant made additional admissions regarding the state of the art and certain prior art references. In an Accelerated Examination Support Document submitted to the USPTO on November 10, 2008, the applicant identified "the references most closely related" as WO 2006/044476 (Vanman), EP 1,064,783 (Mann), and US 5,523,799 (Hattori). The applicant provided tables admitting that these prior art references disclosed many of the claim limitations:

PATENT OWNER
Ex 2004

The Limitation that is disclosed	WO 6,044,476 to Vanman	EP 1,064,783 to Mann	US 5,523,799 to Hattori
1	x	x	x
2	x	x	x
3	x	x	X
4		x	x
5	x		
6	x	x	x
7			x
8	x	x	x
9			
10	x	x	
11	x	x	
12	x		
13	x		
14	x	x	
15	x		

Limitation 1 - a surveillance apparatus

Limitation 2 - a camera that has an image capturing component that captures images

Limitation 3 - a camera that has a converting component that converts the images into at least one data stream

Limitation 4 - a local memory functionally connected to the camera

Limitation 5 - a wireless transmitter functionally connected to the local memory

Limitation 6 - a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory

Limitation 7 - a protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write-protected portion

Limitation 8 - a pre-recorded subset of the segment is recorded before the signal is received

Limitation 9 - a sending facility that uses the transmitter to wirelessly transmit the write-protected portion to a remote memory

Claim 2. The apparatus of claim 1, wherein the pre-recorded subset is at least 5 seconds long.

Limitation 10 - the pre-recorded subset is at least 5 seconds long

Claim 3. The apparatus of claim 1, wherein the recorded segment is at least 10 seconds long.

Limitation 11 - the recorded segment is at least 10 seconds long

Claim 4. The apparatus of claim 1, further comprising a sensor that automatically initiates the signal to record, wherein the sensor operates upon content in at least one of the images captured from the camera.

Limitation 12 - a sensor that automatically initiates the signal to record

Limitation 13 - the sensor operates upon content in at least one of the images captured from the camera

Claim 5. The apparatus of claim 1, further comprising an interface through which a human can initiate the signal.

Limitation 14 - an interface through which a human can initiate the signal

Claim 6. The apparatus of claim 1, further comprising an interface through which a human can designate a length of time of at least one of the pre-recorded subset and the post-recorded segment.

Limitation 15 - an interface through which a human can designate a length of time of the pre-recorded subset

PATENT OWNER
Ex 2004

The Limitation that is disclosed	WO 6,044,476 to Vanman	EP 1,064,783 to Mann	US 5,523,799 to Hattori
16	x		
17			
18			
19			
20	x	x	
21		x	
22			
23	x	x	x
24	x	x	x
25	x	x	x
26			x
27	x	x	x
28			
29			
30			
31			
32	x		
33	x	x	
34			
35	x		x
36			
37			
38			
39			

Limitation 16 - an interface through which a human can designate a size of the post-recorded segment

Claim 7. The apparatus of claim 1, wherein the remote memory is located on a mobile phone.

Limitation 17 - the remote memory is located on a mobile phone

Claim 8. The apparatus of claim 1, wherein a mobile phone receives the recorded segment from the wireless transmitter and forwards the recorded segment to the remote memory.

Limitation 18 - a mobile phone receives the recorded segment from the wireless transmitter

Limitation 19 - a mobile phone forwards the recorded segment to the remote memory

Claim 9. The system of claim 1, further comprising a mount for the camera.

Limitation 20 - a mount for the camera

Claim 10. The system of claim 9, wherein the mount is a pair of wearable glasses.

Limitation 21 - the mount is a pair of wearable glasses

Claim 11. The system of claim 1, further comprising an electronic index that references addresses of the write-protected portion.

Limitation 22 - an electronic index that references addresses of the write-protected portion

Claim 12. A method of processing imaged data from a camera, comprising the following steps:

receiving a stream of the imaged data;

recording the stream into available portions of a circular buffer;

responding to a signal by write-protecting a newly recorded portion of the buffer, wherein a subset of the newly recorded portion is recorded before the signal is received

indexing write protected portions of the buffer during the step of recording; and

wirelessly transmitting at least one of the write-protected portions of the circular buffer to a remote memory.

Limitation 23 - a method of processing imaged data from a camera

Limitation 24 - receiving a stream of the imaged data

Limitation 25 - recording the stream into available portions of a circular buffer

Limitation 26 - responding to a signal by write-protecting a newly recorded portion of the buffer

Limitation 27 - a subset of the newly recorded portion is recorded before the signal is received

Limitation 28 - indexing write protected portions of the buffer during the step of recording

Limitation 29 - wirelessly transmitting at least one of the write-protected portions of the circular buffer to a remote memory

PATENT OWNER
Ex 2004

The Limitation that is disclosed	WO 6,044,476 to Vanman	EP 1,064,783 to Mann	US 5,523,799 to Hattori
16	x		
17			
18			
19			
20	x	x	
21		x	
22			
23	x	x	x
24	x	x	x
25	x	x	x
26			x
27	x	x	x
28			
29			
30			
31			
32	x		
33	x	x	
34			
35	x		x
36			
37			
38			
39			

Claim 13. The method of claim 12, further comprising storing the write-protected portions as separate files.

Limitation 30 - storing the write-protected portions as separate files

Claim 14. The method of claim 12, further comprising recording the stream into physically dis-contiguous parts of the circular buffer.

Limitation 31 - recording the stream into physically dis-contiguous parts of the circular buffer

Claim 15. The method of claim 12, wherein the signal to save a recording comprises a signal tc start recording and a signal to stop recording.

Limitation 32 - the signal to save a recording comprises a signal to start recording and a signal to stop recording

Claim 16. The method of claim 12, further comprising receiving the signal to save a recording through at least one of a manually operated switch and an audio signal.

Limitation 33 - receiving the signal to save a recording through a manually operated switch

Limitation 34 - receiving the signal to save a recording through an audio signal

Claim 17. The method of claim 12, further comprising configuring the size of the pre-recorded subset.

Limitation 35 - configuring the size of the pre-recorded subset

Claim 18. The method of claim 12, further comprising removing write-protection from a transmitted write-protected portion after transmission.

Limitation 36 - removing write-protection from a transmitted write-protected portion after transmission

Claim 19. The method of claim 12, further comprising sending a warning to a user before the newly recorded portion of the buffer is fully recorded.

Limitation 37 - sending a warning to a user before the newly recorded portion of the buffer is fully recorded

Claim 20. The method of claim 19, further comprising extending a length of the newly recorded portion in response to at least one of a manually operated switch and an audio signal.

Limitation 38 - extending a length of the newly recorded portion in response to a manually operated switch

Limitation 39 - extending a length of the newly recorded portion in response to an audio signal

Applicant's Admissions Regarding WO 2006/044476 (Vanman)

The applicant described WO 2006/044476 (Vanman) as follows:

> Vanman teaches a video camera mounted on a police car that continuously records data to a circular buffer on a hard drive, and that can then retroactively save video streams by writing those video streams from the hard drive to a DVD. Vanman also teaches attaching a wireless Ethernet device to the microcontroller to wirelessly transmit encoded audio and video to a central office. Vanman, however, does not teach designating a segment of the circular buffer as a write-protected portion. The entire hard drive is being written to at all times, segments of the circular buffer could be easily overwritten before a video stream is saved to a DVD or a central office.

The applicant admitted that WO 2006/044476 (Vanman) discloses many of the claim limitations; in the applicant's own words:

Claim Limitation	**WO 2006/044476 (Vanman)**
Limitation 1 - a surveillance apparatus	**Satisfied.** Vanman teaches a system that records video and audio. (See para [0024])
Limitation 2 - a camera that has an image capturing component that captures images	**Satisfied.** Vanman teaches a system that captures images from a video camera and processes the signal to create a digital video signal. (See para [0024])
Limitation 3 - a camera that has a converting component that converts the images into at least one data stream	**Satisfied.** Vanman teaches a system that captures images from a video camera and processes the signal to create a digital video signal. (See para [0024])
Limitation 5 - a wireless transmitter functionally connected to the local memory	**Satisfied.** Vanman teaches a wireless Ethernet interface functionally connected to the hard drive. (See para [0034] and corresponding Figure 1, elements 80 and 145)
Limitation 6 - a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory	**Satisfied.** Vanman teaches a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory. The entire hard drive of Vanman is an "available portion" that is continuously overwritten. (See para [0058])
Limitation 8 - a pre-recorded subset of the segment is recorded before the signal is received	**Satisfied.** Vanman teaches responding to an event by selecting a data stream that was recorded ten minutes prior to the event start point. (See para [0040])
Limitation 10 - the pre-recorded subset is at least 5 seconds long	**Satisfied.** Vanman teaches responding to an event by selecting a data stream that was archived ten minutes prior to the event start point. (See para [0040])
Limitation 11 - the recorded segment is at least 10 seconds long	**Satisfied.** Vanman teaches responding to an event by selecting a data stream that was archived ten minutes prior to the event start point. (See para [0040])

PATENT OWNER
Ex 2004

Claim Limitation	WO 2006/044476 (Vanman)
Limitation 12 - a sensor that automatically initiates the signal to record	**Satisfied.** Vanman teaches automatically initiating the signal to record through an event trigger. (See para [0039], [0051])
Limitation 13 - the sensor operates upon content in at least one of the images captured from the camera	**Satisfied.** Vanman teaches automatically initiating the signal to record through external emergency lights that are probably captured by the video camera on the squad car. (See para [0024], [0051])
Limitation 14 - an interface through which a human can initiate the signal	**Satisfied.** Vanman teaches initiating the signal to record by an operator pressing a RECORD key on a control panel. (See para [0051])
Limitation 15 - an interface through which a human can designate a length of time of the pre-recorded subset	**Satisfied.** Vanman teaches a setting in a user-interface menu that can be used to determine how much of the video data stream to include before and after the event markers. (See para [0052])
Limitation 16 - an interface through which a human can designate a length of time of the post-recorded segment	**Satisfied.** Vanman teaches a setting in a user-interface menu that can be used to determine how much of the video data stream to include before and after the event markers. (See para [0052])
Limitation 20 - a mount for the camera	**Satisfied.** Vanman teaches that the camera is mounted on a vehicle. (See para [0002][0004], [0065])
Limitation 23 - a method of processing imaged data from a camera	**Satisfied.** Vanman teaches encoding and decoding imaged data from the camera. (See para [0024]-[0029])
Limitation 24 - receiving a stream of the imaged data	**Satisfied.** Vanman teaches receiving a data stream of the imaged data (see para [0024] - [0029])
Limitation 25 - recording the stream into available portions of a circular buffer	**Satisfied.** Vanman teaches recording the stream into available portions of a circular buffer. The entire hard drive of Vanman is an "available portion" that is continuously overwritten. (See para [0058])
Limitation 27 - a subset of the newly recorded portion is recorded before the signal is received	**Satisfied.** Vanman teaches archiving a data stream that was recorded ten minutes prior to the event start point. (See para [0040])
Limitation 32 - the signal to save a recording comprises a signal to start recording and a signal to stop recording	**Satisfied.** Vanman teaches record triggers that act as signals to save a recording with an event to start recording an event to stop recording. (See para [0040], [0043], [0054])
Limitation 33 - receiving the signal to save a recording through a manually operated switch	**Satisfied.** Vanman teaches receiving a signal to save a recording through an operator pressing a RECORD key on a control panel. (See para [0052])
Limitation 35 - configuring the size of the pre-recorded subset	**Satisfied.** Vanman teaches configuring how much of the video data stream to include before and after the event markers. (See para [0052])

PATENT OWNER
Ex 2004

Applicant's Admissions Regarding EP 1,064,783 (Mann)

The applicant described EP 1,064,783 (Mann) as follows:

> Mann teaches a portable electronic camera system that is wearable on the body, specifically eyeglasses. The camera has a memory with a circular buffer that is constantly recording, and a user can record data recorded 5 minutes in the past by activating a chording keyboard on the user's belt. The camera can also wirelessly transmit data to a television or a computer device. Mann, however, fails to teach protecting segments of the circular buffer or overwriting only unprotected segments of the circular buffer. When the record function is activated, the camera must either wirelessly transmit the data, or the buffer will be overwritten. Additionally, it appears that the system of Mann has a memory that is wirelessly connected to the camera instead of locally attached to the camera.

The applicant admitted that EP 1,064,783 (Mann) discloses many of the claim limitations; in the applicant's own words:

Claim Limitation	**EP 1,064,783 (Mann)**
Limitation 1 - a surveillance apparatus	**Satisfied.** Mann teaches a wearable camera. (See para [0015], [0017], [0049])
Limitation 2 - a camera that has an image capturing component that captures images	**Satisfied.** Mann teaches recording images and processing digital signals, which implicitly teaches capturing those images with an image capturing component. (See para [0015], [0017], [0051]-[0052])
Limitation 3 - a camera that captures images and converts the images into a data stream	**Satisfied.** Mann teaches recording images and processing digital signals, which implicitly teaches converting those images into a data stream. (See para [0015], [0017], [0051]-[0052])
Limitation 4 - a local memory functionally connected to the camera	**Satisfied.** Mann teaches a storage device on a computer that is functionally connected to the camera. (See para [0058], [0065], [0077])
Limitation 6 - a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory	**Satisfied.** Mann teaches a recording facility that continuously records a data stream from the camera into available portions of a circular buffer in the storage device. (See para [0058], [0065])
Limitation 8 - a pre-recorded subset of the segment is recorded before the signal is received	**Satisfied.** Mann teaches that the recorded segment contains a recording starting from 5 minutes prior to the time the record button was pressed. (See para [0065])
Limitation 10 - the pre-recorded subset is at least 5 seconds long	**Satisfied.** Mann teaches that the pre-recorded subset is 5 minutes long. (See para [0065])
Limitation 11 - the recorded segment is at least 10 seconds long	**Satisfied.** Mann teaches Mann teaches that the pre-recorded subset is 5 minutes long. (See para [0065])

Claim Limitation	EP 1,064,783 (Mann)
Limitation 14 - an interface through which a human can initiate the signal	**Satisfied.** Mann teaches an Emacs interface through which a human can initiate the signal to record. (See para [0063]-[0065])
Limitation 20 - a mount for the camera	**Satisfied.** Mann teaches that the camera could be mounted on a pair of eyeglasses. (See para [0007], [0039], [0047], [0056]-[0060], [0098] and corresponding Figures 1 and 6)
Limitation 21 - the mount is a pair of wearable glasses	**Satisfied.** Mann teaches that the camera could be mounted on a pair of eyeglasses. (See para [0007], [0039], [0047], [0056]-[0060], [0098] and corresponding Figures 1 and 6)
Limitation 23 - a method of processing imaged data from a camera	**Satisfied.** Mann teaches recording images and processing digital signals from a camera. (See para [0015], [0017], [0051]-[0052])
Limitation 24 - receiving a stream of the imaged data	**Satisfied.** Mann teaches recording images and processing digital signals, which implicitly teaches converting those images into a data stream. (See para [0015], [0017], [0051]-[0052])
Limitation 25 - recording the stream into available portions of a circular buffer	**Satisfied.** Mann teaches recording the data stream into available portions of a circular buffer. The entire memory of Mann seems to be the circular buffer. (See para [0017], [0058], [0065])
Limitation 27 - a subset of the newly recorded portion is recorded before the signal is received	**Satisfied.** Mann teaches that the recorded portion was recorded 5 minutes before the signal to record is received. (See para [0065])
Limitation 33 - receiving the signal to save a recording through a manually operated switch	**Satisfied.** Mann teaches that the signal to save a recording is received through a chording keyboard worn on the wearer's waist. (See para [0064])

Applicant's Admissions Regarding US 5,523,799 (Hattori)

The applicant described US 5,523,799 (Hattori) as follows:

> Hattori teaches an image memory apparatus that continuously writes new images into a circular buffer. A user can write-protect parts of the circular buffer that has been previously recorded to prevent the device from overwriting those portions of the buffer. Hattori, however, does not teach that there is a wireless transmitter that transmits write-protected portions to a remote memory.

The applicant admitted that US 5,523,799 (Hattori) discloses many of the claim limitations; in the applicant's own words:

Claim Limitation	US 5,523,799 (Hattori)
Limitation 1 - a surveillance apparatus	**Satisfied.** Hattori teaches an apparatus that records images. (See C2/L8-50)
Limitation 2 - a camera that has an image capturing component that captures images	**Satisfied.** Hattori teaches a camera that captures images and converts the analog stream into a digital stream. (See C3/L21-31)
Limitation 3 - a camera that has a converting component that converts the images into at least one data stream	**Satisfied.** Hattori teaches a camera that captures images and converts the analog stream into a digital stream. (See C3/L21-31)
Limitation 4 - a local memory functionally connected to the camera	**Satisfied.** Hattori teaches a multi-port random access memory functionally connected to the camera. (See C3/L26-28 and corresponding Figure 2, element 12)
Limitation 6 - a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory	**Satisfied.** Hattori teaches a recording facility that continuously records the data stream into available portions of a ring memory in the memory. (See C3/L57-C4/L11, and corresponding Figures 1 and 2)
Limitation 7 - a protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write-protected portion	**Satisfied.** Hattori teaches a protecting facility that responds to a signal to record by designating a recorded segment of the ring memory as a write-protected portion. (See C3/L62-C4/L2)
Limitation 8 - a pre-recorded subset of the segment is recorded before the signal is received	**Satisfied.** Hattori teaches that the segment is recorded before the signal to record is received. (See C3/L62-C4/L2)
Limitation 23 - a method of processing imaged data from a camera	**Satisfied.** Hattori teaches a method of processing imaged data from a camera. (See C2/L8-50)
Limitation 24 - receiving a stream of the imaged data	**Satisfied.** Hattori teaches receiving a stream of the imaged data. (See C3/L21-31)
Limitation 25 - recording the stream into available portions of a circular buffer	**Satisfied.** Hattori teaches recording the data stream into available portions of a ring memory. (See C3/L57-C4/L11, and corresponding Figures 1 and 2)
Limitation 26 - responding to a signal by write-protecting a newly recorded portion of the buffer	**Satisfied.** Hattori teaches responding to a signal to protect data by write-protecting a previously recorded portion of the ring memory. (See C3/L62-C4/L2)
Limitation 27 - a subset of the newly recorded portion is recorded before the signal is received	**Satisfied.** Hattori teaches that the protected segment is recorded before the signal to record is received. (See C3/L62-C4/L2)
Limitation 35 - configuring the size of the pre-recorded subset	**Satisfied.** Hattori teaches that the size of the memory address area for the ring memory can be arbitrarily set. (See C4/L1-2)

* * *

During the prosecution of U.S. Patent Application No. 12/268,286, the application further described the invention being claimed as follows:

> The current invention is directed to a method and apparatus for continuously recording image information so that a user can both save recorded segments in the circular buffer and also offload the recorded segments wirelessly to a second memory. This dual utility is very important because while it's preferable to wirelessly offload recorded segments to a second memory location, it's not always feasible to do so when wireless connections are sporadic and inconsistent in certain areas. Therefore, it is very important that when a wireless connection is unavailable that the user of the camera can prevent certain portions of the circular buffer from being overwritten.

* * *

The applicant further admitted during the prosecution of U.S. Patent Application No. 12/268,286 that a host of claim features and limitations were "not separately patentable":

> Claim 2 limits the surveillance apparatus of claim 1 to further comprise having a pre-recorded subset that is at least 5 seconds long. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.
>
> Claim 3 limits the surveillance apparatus of claim 1 to further comprise having a pre-recorded subset that is at least 10 seconds long. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.
>
> Claim 4 limits the surveillance apparatus of claim 1 to further comprise a sensor that automatically initiates the signal to record that triggers based upon content in one or more images captured from the camera. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.
>
> Claim 5 limits the surveillance apparatus of claim 1 to further comprise an interface through which a human can initiate the signal. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.
>
> Claim 6 limits the surveillance apparatus of claim 1 to further comprise an interface through which a person can designate how long either the pre-recorded section is, or the post-recorded segment is. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.
>
> Claim 9 limits the surveillance apparatus of claim 1 to further comprise a mount for the camera. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.

PATENT OWNER
Ex 2004

Claim 10 limits the surveillance apparatus of claim 9 to further comprise that the mount is a pair of wearable glasses. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.

Claim 15 limits the method of claim 12 to further comprise that the signal comprises a signal to start recording and a signal to stop recording. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.

Claim 16 limits the method of claim 12 to further comprise receiving the signal to save a recording through at least one of a manually operated switch and an audio signal. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.

Claim 17 limits the method of claim 12 to further comprise configuring the size of the pre-recorded subset. This claim is considered to be not separately patentable beyond the limitations contained in the parent claim.

Pre-Event Recording or Record-After-The-Fact Was Well Known In The Art

Prior to the alleged invention, it was known in the art to use a ring or circular buffer to record pre-event data such as the following exemplary references:

U.S. 5,996,023 ("Winter"), issued November 30, 1999:

> The parent patent application discloses an additional strategy, referred to as pre-alarm buffering, which also promotes efficient use of limited signal storage capacity. The basic concept is that the respective video streams generated by some or all of the cameras connected to the recorder are not usually selected for permanent storage. Instead, a ring buffer is provided to record the signal streams at a given (perhaps shared) field rate for a limited period of time, say one minute. If a significant event is detected, such as tripping of an alarm sensor, actuation of an alarm condition by a human operator, or detection of a predetermined characteristic of an incoming image stream by machine analysis of the image stream, then the video signal stream in the ring buffer, which would normally have been overwritten, is preserved for permanent storage. Pre-alarm buffering represents a desirable compromise which avoids devoting permanent storage capacity to large quantities of uninteresting information, while increasing the likelihood that significant information will be permanently recorded. The present application is concerned with techniques for efficiently managing pre-alarm buffering operations.

Winter at 1:50-2:4.

> According to a first aspect of the invention, there is provided a video data storage apparatus, including a plurality of video cameras, each generating a respective stream of video signals; conversion circuitry, connected to the plurality of video signals, for selectively converting the streams of video signals into respective

> streams of video data signals; a circular data buffer for selectively storing ones of the streams of video data signals subject to overwriting by more current video data signals; a main data store for selectively storing ones of the streams of video signals and for writing the video data signals in the main data store to a removable archive recording medium; a detection circuit for detecting an alarm condition; and a control circuit for selecting between a first process and a second process different from the first process, on the basis of the alarm condition detected by the detection circuit, the first and second processes both being processes for transferring a stream of video data signals from the circular data buffer to the main data store. According to this aspect of the invention, the circular data buffer and the main data store may respectively include first and second portions of a hard disk drive. Moreover, the first process may include reading the stream of video data signals to be transferred from the circular data buffer and rewriting that stream of video data signals to the main data store, and the second process may include designating the first portion of the hard disk to be a portion of the main data store.

Id. at 2:12-38.

U.S. 2003/0151663 ("Lorenzetti"), published August 14, 2003:

> An in-car video apparatus and method is provided where a real time (i.e., "live") continuous video stream supplied by a vehicle-mounted camera is processed for storage in a memory in a time-sequential manner for a pre-set time interval to create a time-delayed video stream. Upon activation by a law enforcement officer (which occurs at an arbitrary reference time), a vehicle-mounted recording device records the time-delayed video stream to create a video recording of the events captured by the video camera. Because the time-delayed video stream is recorded rather than the real time video stream, the start time of the video recording precedes the reference time by the pre-set time interval. The invention thus provides an ability to record an event after it has already occurred.

Lorenzetti at [0009].

> The invention provides many advantages. By buffering the real time video and audio streams to create the time-delayed video and audio stream, the officer has a period of time equal to the pre-set time interval to react to a witnessed event, such as a traffic infraction, and activate the video recorder. For example, if the time-delay is six seconds, then the officer is provided with up to six seconds in which to activate the video recorder and still be able to record the witnessed event on videotape. Accordingly, the invention provides a complete record of a police-citizen encounter, including the initial incident, event or behavior that captured the officer's attention in the first place. The odds that evidence supporting probable cause is contained in the videotaped record are thus greatly enhanced.

Lorenzetti at [0012].

PATENT OWNER
Ex 2004

Furthermore, "the big selling point for digital video is a feature with the mundane name of 'pre-event recording.'" Special Report: The Patrol Video Project, LAW and ORDER, [MOTOROLA_007581-MOTOROLA_007602] July 2004 at 2.

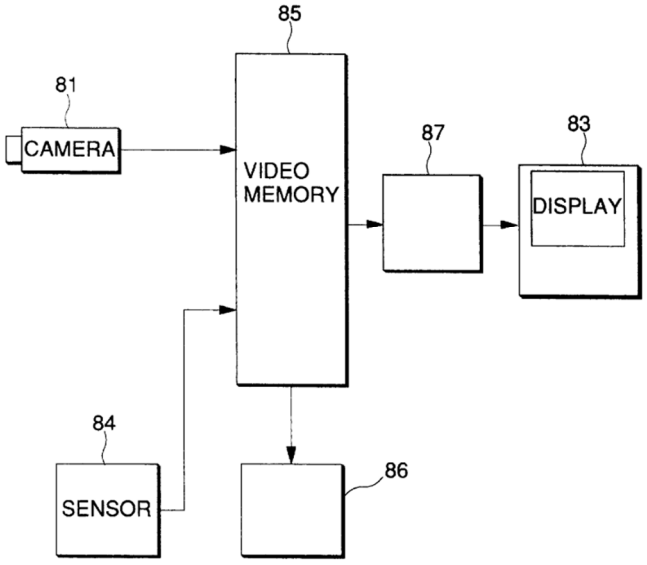
> Here's your scenario: you are sitting at a traffic light, car in drive and brain in neutral, when the light changes to green for traffic in your lane. You start to move forward when Maladroit Leadfoot blows through the intersection two seconds behind the red light, giving you the one finger salute as he passes by. You shift the lightbar into Christmas Time, go after and catch Maladroit, but wouldn't it be grand if his performance in the intersection was available for the traffic court judge to see? Well, on reviewing the recording that was initiated when you turned on the lightbar, for example, you find that it begins with 20 seconds or so of dull intersection-watching, when Mr. Leadfoot makes his breathtaking entrance, and your brief pursuit and stop follows. How can this be?
>
> Most of the new digital patrol video systems are in a passive recording mode whenever there is power to the system. The recording is captured by a solid-state memory chip with a capacity of anywhere from 10 seconds to five minutes, depending on the system setting and the manufacturer. This means the last 10 seconds to five minutes is always available to the system.
>
> When the officer puts the system into record mode, the contents of that memory device are dumped to the recording medium, and everything else that follows is appended to the end of that sequence. Thus, any recording made by the officer will actually start 10 to 600 seconds before he commands the system to record. The sudden lane change of the DUI, the suicidal pedestrian who walks out in front of you, the idiot who blows through the red light are all recorded for introduction in court. It's a beautiful thing.

Id.

Further, U.S. 6,167,186 ("Kawasaki") explains that "FIG. 8 is a block diagram of a video recording device disclosed in JP-A-2-132599." Kawasaki at 1:29-30. "FIG. 9 is a timing chart of the operation of the device." Kawasaki at 1:30-31.

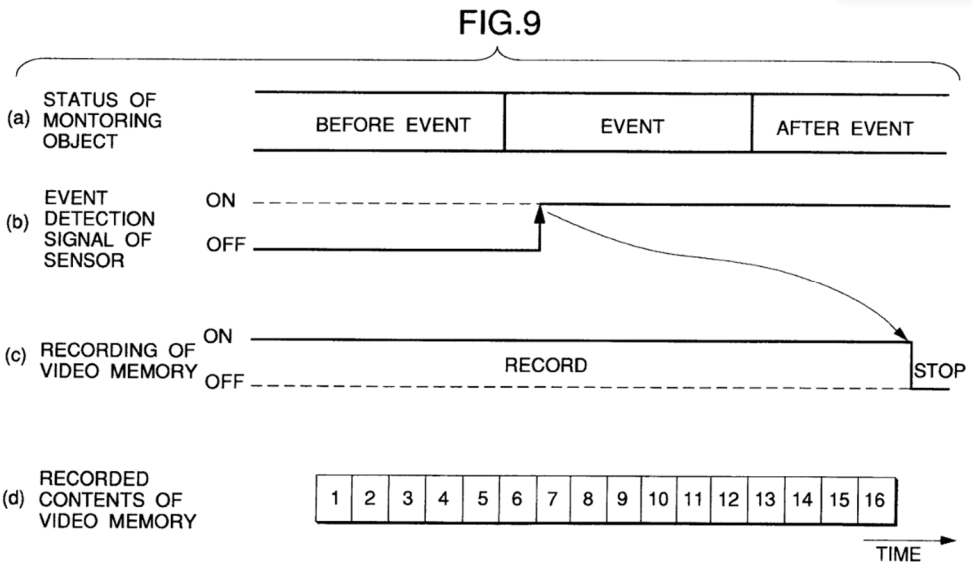
PATENT OWNER
Ex 2004

FIG.8



Id. at Fig. 8.

FIG.9



Id. at Fig. 9. "In this video recording device, a video image inputted from a camera is recorded in a video memory 85 and the recording of the video memory 85 is stopped at a timing responding to an input from a sensor 84, and the video image before and after the sensor 84 produces an event detecting signal that can be displayed." *Id*. at 1:31-36. "However, since the recording is stopped in response to the signal from the sensor, when the next events occur successively, the video image

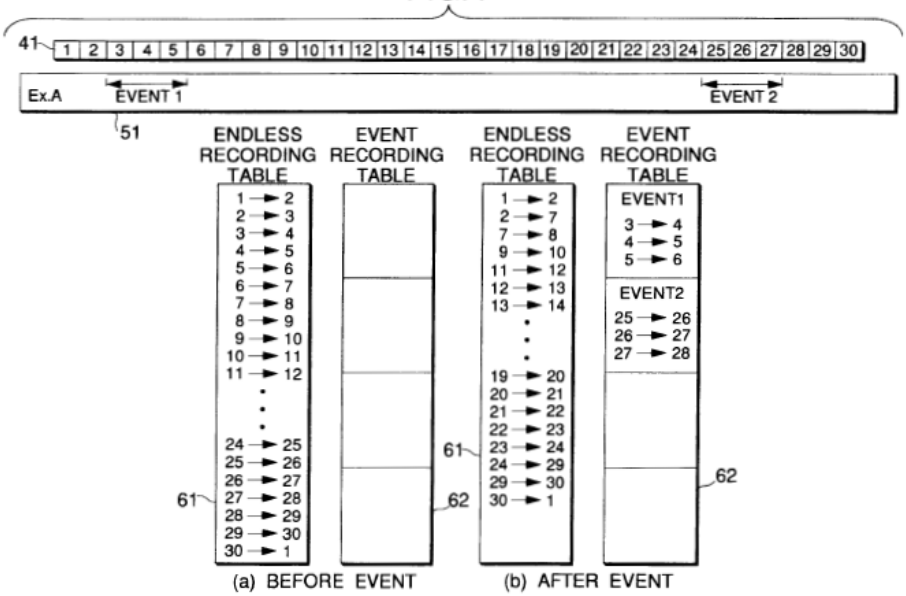
before and after the event cannot be stored." *Id*. at 36-39. "Although the device disclosed in JP-A-2-132599 can review the status before and after the event, it cannot deal with another subsequent event since it stops recording during the period." *Id*. at 1:59-62. "The [Kawasaki] invention has been accomplished to solve the above problem and intends to provide a device which can always record the video image inputted in real time and reproduce the image recorded last without stopping the recording." *Id*. at 1:65-2:2. It further discloses "a system which can preserve the video image (recorded event image) before and after the event recorded in the video recording device has occurred, as historical record of video information for a long time." *Id*. at 2:6. Specifically, "[i]n the video recording device, the successive recording control unit records the video data from the temporary memory unit in endless recording mode and in accordance with an external event signal, it excludes a recording area correlated with the event signal from the area subjected to the endless recording so that it is managed as an event recording area." *Id*. at 2:15-21.

> Now referring to FIG. 4. an explanation will be given of a method of the processes of recording and reproducing in the successive recording control unit 6. Reference numeral 41 shows the state where the successive recording unit 5 is divided into a plurality of blocks (30 blocks in this example) labeled block numbers (pointers), respectively. Reference numeral 51 denotes a time zone of events which have occurred during the successive recording. The successive recording control unit 6 includes an endless recording table 61 and an event recording table 62, and manages the numbers of the blocks on which the digital video image is to be recorded as shown in part (a) of FIG. 4. The notation "1-2" in the part (a) represents that the recording block successive to block No. 1 is block No. 2. By provision of such a recording table, the blocks are overwritten in order from the block with an older record.

Id. at 4:30-45.

PATENT OWNER
Ex 2004

FIG.4



Id. at Fig. 4. "Next, an explanation will be given of the operation when the successive recording control unit 6 receives an event signal from the event signal inputting unit 7." *Id*. at 4:39-48. "Now it is assumed that the event signal is inputted while the recording is made at the position of block No. 4." *Id*. at 4:48- 50. "In this case, the video image from block No. 3 with a previously recorded image to block No. 6 with a video image after the event will be managed as an event video image." *Id*. at 4:50-53.

> Since the present invention always executes the recording in a manner of endless recording, the video image inclusive of the video image prior to inputting of the event signal can be managed as an event video image. Thus, event No. 1 will be managed on the event recording table as shown in part (b) of FIG. 4. Event No. 2 will be managed similarly. Now if only the event recording table is updated as it is, the event video images are overwritten to disappear at a period of endless recording. For this reason, the endless recording table must be also modified. As shown in the part (b), notation "2-7" represents that the block Nos. 3, 4, 5 and 6 are excluded from the loop of the endless recording. Likewise, notation "24-29" saves the event video image of event No. 2 from the endless recording. In this way, in the endless recording area, the recording area correlated with the event signal will not be thereafter used as an endless recording and not overwritten so that the event video image will be held for a longer period than the endless recording period.

Id. at 4:53-5:4. "Since the event video image when an event occurs needs not to be transferred to a separate area, the access time in the successive recording unit can be efficiently used so that the event video image can be reproduced with a sufficient allowance." *Id*. at 7:4-9.

Additionally, U.S. 7,804,426 ("Etcheson") disclosed a "System and method for selective review of event data" including "pre-event data":

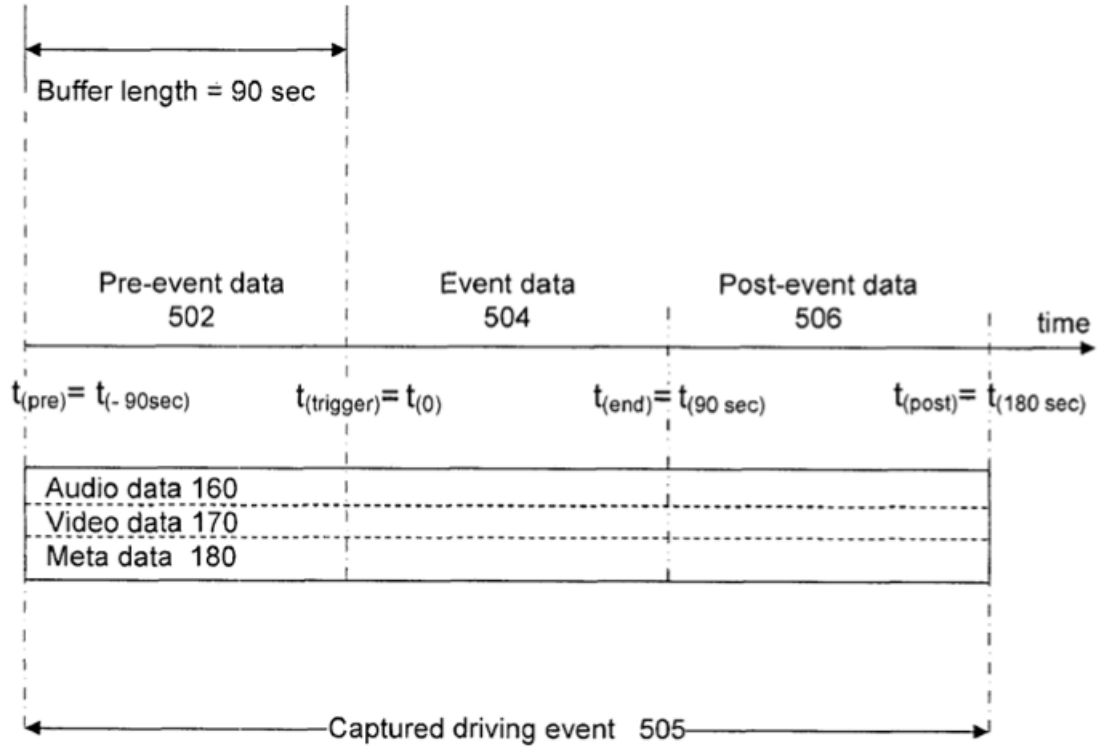
> Systems and methods for computer assisted cueing and selective reviewing of driving data in order to save time in the data review process are provided. The method allows identifying essential portions of the data, selecting the essential portions, reviewing the selected data and retrieving additional data leading to the event if necessary. At least one event capture device continuously captures data into a buffer. The data are sent to an event detector communicatively coupled to the event capture device only when the event detector requests them. After receiving the data, the event detector selects and indexes a pre-event portion, during-event portion and post-event portion, combines the portions of captured data into a single driving event record and sends the driving event record to the evaluation server. From the server, the driving event record is sent to the analysis station for review and analysis.

Abstract.

> In one embodiment, the event detector is configured to create metadata tags, and use those tags to index the beginning and the end of the pre-event data, event data and post-event data. For example, the beginning of the pre-event data can be indexed with a pre-event time tag set to the beginning of the pre-event data, whereas the end of the pre-event data can be indexed with a trigger time tag set to the end of the pre-event data. Similarly, the beginning of the event data can be indexed with the trigger time tag set to the beginning of the event data, whereas the end of the event data can be indexed with an end time tag set to the end of the event data. Correspondingly, the beginning of a post-event data can be indexed with the end time tag set to the beginning of the event data, whereas the end of the post-event data can be indexed with a post-event time tag set to the end of the post-event data.

Id. at 5:49-63.

PATENT OWNER
Ex 2004



> In the embodiment illustrated in FIG. 4, a captured driving event or driving event record 505 comprises three consecutive buffers of collected data. Each buffer is indexed using metadata tags and then concatenated to form the event 505. More specifically, the pre-event data 502 was collected during a period of time which started at a "pre time" (indicated as $t_{(pre)}$) and ended at the trigger time (indicated as $t_{(trigger)}$). Similarly, the event data 504 was collected during a period of time which started at the trigger time (indicated as $t_{(trigger)}$) and ended at an "end time" (indicated as $t_{(end)}$). Correspondingly, the post-event data 506 was collected during a period of time which started at the end time (indicated as $t_{(end)}$) of the event data and ended at a "post time" (indicated as $t_{(post)}$). Then, the pre-event data 502 was concatenated with the event data 504 and with the event data 506.

Id. at 6:1-15.

Prior to the alleged invention, it was known in the art to use a record after-the-fact feature such as the following exemplary references:

U.S. 2002/0131768, published September 19, 2002 ("Gammenthaler 1") and U.S. 2004/0201765 ("Gammenthaler 2"), published October 14, 2004:

> However, the embodiment of FIG. 2 has the additional capability to record after-the-fact events which the officer may have missed because the record mode was

PATENT OWNER
Ex 2004

> not on when the event occurred. This is provided by the use of a hard disk 60 which stores all compressed video and audio data output by the compression process or the optional anti-tampering circuit at all times regardless of whether tape recording mode is on or off. This system also has the ability to record data from either of two-different video cameras, one of which may be wireless, and either of which may be selected and the ability to record audio from either of two different microphones, one of which may be wireless, and either of which may be selected.

Gammenthaler 1 at [0046]; *see also* Gammenthaler 2 at [0045]; U.S. 7,190,882, filed March 19, 2001.

> All the data on line 100 is continuously recorded on a 15 gigabyte hard drive 60 which is used as a FIFO memory. Data can be archived off the hard disk 60 to the digital video tape recorder 52 via bus 102. After the fact recording to tape can be accomplished using the system controller. If an officer wants to record to tape all the events that happened in the last 10 minutes or starting from some particular time of day he remembers to be before a significant event, he can give a command via control panel 20 to the system controller 54. Part of the data continuously recorded on hard disk 60 is time of day data supplied by clock 104 and/or a frame count signal.

Gammenthaler 1 at [0055]; *see also* Gammenthaler 2 at [0054].

> The system controller 55 can be controlled in this embodiment by the officer via control panel 20 to send a command to the hard disk 51 to cause it to playback all recorded data starting from a specific frame number or a specific time of day or going back from the present time by a specified number of minutes on output 57 to be archived by tape recorder 52. The hard disk then finds the appropriate data in any way and outputs it on line 57. In some embodiments, the hard disk has a cache memory in which frame number and time of data data are recorded along with the track and sector or block number on the hard disk where the corresponding video, audio and status data for that frame number and/or time of day were recorded. This provides an after-the-fact recording capability in case the officer did not have the in-car video system in record mode when some significant event happened. In alternative embodiments, since the hard disk 51 is used as a FIFO and will be overwritten when it reaches its capacity, the system controller can be programmed to automatically cause the digital video tape recorder to record all data on line 53 when the hard disk reaches capacity.

Gammenthaler 1 at [0060]; *see also* Gammenthaler 2 at [0059].

Additionally, U.S. Pat. No. 8,081,214 ("Vanman") discloses a "Record After-the Fact" feature. Specifically, "[r]ecording after-the-fact permits manual chapter event creation to be performed." Vanman at 12:62-63.

PATENT OWNER
Ex 2004

> If a user wants to go in after the fact and copy some video that wasn't marked as an event, the user can go back and manually put in a new start and stop point. The system will automatically grab that section of video and feed it to the DVD drive 85 and make a new chapter. The common use of that feature will be by, for example, internal affairs in order to investigate some alleged misconduct. Of course, embodiments of the system may be applied to areas outside of the area of law enforcement, and then the conduct referred to may be an officer or another party in an organization utilizing the methods and systems of the present invention.

Id. at 12:63-13:6.

> Record After-the-Fact – Manual Chapter Event Creation
>
> It is very desirable for users to be able to retrieve audio and video data from the hard drive of time periods that they did not previously mark to be "recorded" to the DVD disc. The product provides the ability for users (or supervisors) to rewind footage on the hard drive to the point in time of interest, insert a new "event start marker" and then insert a new "event stop marker." The user can choose to transfer either the high or lower bit rate version of the event. The system will then automatically transfer the newly marked event to the DVD disc as a new chapter.
>
> Some common uses for this feature will be by law enforcement investigators when they want to investigate claims of officer misconduct.

WatchGuard Video DV-1 Product, WatchGuard Video, [MOTOROLA_004959-MOTOROLA_004961], October 6, 2004 at 2-3.

> Record-After-the-Fact (Manual Chapter Creation)
>
> The feature allows you to retrieve any video, up to a day later from the integrated hard drive – even if it was not originally intended to be recorded (initiated by the lights, siren, or record key). This is great for investigations or instances where the officer passed by a location that became crime scenes shortly there-after.
>
> This is how it works: the DV-1 temporarily saves video footage to the hard drive continuously in an endless buffer loop that is constantly over-writing the oldest video. Both a normal and a high quality MPEG stream is written to the hard drive all of the time. The length of this buffered period depends upon various settings (image quality selection and the number of DVD disc images saved as backups). Typically, the system will have all of the video data from the most recent 24 hours of operation (whenever the vehicle is running).
>
> To add "un-recorded" video to a DVD disc, you simply rewind the hard drive video to a point of interest, insert a new record point, then fast forward to where you want to insert a new end point.

PATENT OWNER
Ex 2004

The Amazing Features of the WatchGuard DV-1, WatchGuard Video, [MOTOROLA_004949-MOTOROLA_004958], January 20, 2005 at 1.

Additionally, U.S. 6,389,340 ("Rayner"), issued May 14, 2002 discloses using a loop buffer to capture pre-event data:

> Under control of CPU 34, digital signals representing the video imagery are stored in dynamic random-access memory (DRAM) 38 that is configured as a continuous-loop buffer. CPU 34 or associated address counter circuitry defines the continuous-loop scheme by employing wrap around memory addressing, in which the highest memory location in a predetermined addressing sequence is adjacent or next to the lowest. Incoming digitized data signals are written to memory locations in DRAM 38 in accordance with the addressing sequence until all allocated locations have been written to, at which time the data signals stored at the next location in the sequence are overwritten with further incoming data signals.

Rayner at 4:9-21.

> CPU 34 monitors the digitized signals representing the acceleration data to which G- force sensors 40 and 42 are responsive. If CPU 34 determines that the acceleration data exceed a predetermined threshold that is believed to be indicative of a collision or other event that would warrant investigation, it copies data from the buffer memory to a more permanent non-volatile memory 56, such as Flash memory. Memories 38 and 56 thus together define a two-tier system, in which the first tier records data in a continuous-loop fashion, and the second tier provides more permanent storage for data in the first tier in response to a triggering event. Data stored in memory 56 in accordance with this scheme are not overwritten unless the entire system is reset by an operator. Preferably, device 10 includes security measures to prevent inadvertent or unauthorized resetting, such as placing the button (not shown) or other sole means for resetting device 10 inside enclosure 18 or in another relatively inaccessible location.
>
> Although in the illustrated embodiment a change in acceleration data that exceeds a predetermined threshold is defined as the triggering event that causes CPU 34 to terminate data acquisition and copy the contents of DRAM 38 to memory 56, in other embodiments a change in any other monitored sensor signal can similarly be defined as the triggering event. Also, although data acquisition can be terminated upon occurrence of the triggering event, in other embodiments data acquisition may continue after occurrence of the triggering event for some predetermined time interval. Thus, so long as a sufficient amount of pre-event data are retained and not overwritten, additional frames of video data or other sensor data can be gathered during and after the collision and stored in memory 56 following the pre-event data.

Id. at 4:75 – 5:22.

PATENT OWNER
Ex 2004

U.S. 6,421,080 ("Lambert"), issued July 16, 2002 discloses reusing cache memory to capture pre-event data and marking data for preservation:

> The image data stored in the temporary memory just prior to detection of a triggering event qualifies as pre-event activity, and will be copied to the long-term memory along with contemporaneously or post-event image data to advantageously provide an image record of events occurring just prior to a triggering event in combination with those generated after the triggering event. This allows the image recording arrangement of the present invention to reduce the amount of image data which needs to be stored without compromising the potential usefulness of the stored image record.

Lambert at 4:41-51.

> Referring now to FIG. 3, as indicated at block 202, system 12 automatically reuses the cache memory when storing data into the cache if the list of dynamic frames has become full. More specifically, system 12 is programmed to reuse the cache by overwriting the oldest dynamic frame with a new image file when the cache is full. As shown in block 204, the last image stored in the cache is tagged to indicate that the image has not yet been copied to disk, and has not yet been marked for storage. Then, at block 206, a determination is made as to whether any ongoing enabled or triggering events use the camera that the generated the latest image. If so, the image is tagged "marked for storage" at block 208. Otherwise, the process proceeds to block 210 and determines on an image by image basis whether there are currently any images stored in the cache that have been "marked for storage" but not yet stored to disk. If such an image is found, the image is then copied or written to disk, and the image file in the cache is tagged as "stored" as denoted at block 212.

Id. at 5:18-36.

U.S. 6,088,635 ("Cox"), issued July 11, 2000 discloses using RAM memory to capture pre- and post-event data:

> The operation of the monitoring unit 400 is similar to the monitoring unit 100 with a few exceptions. The video information obtained by the camera 420 is digitized and continuously stored in RAM of the PC 410. A certain portion of the PC's RAM will be allocated to continuous video storage and information will be continuously stored (and written over previously stored video information). The PC 410 will detect activity from the horn and brake sensor 440 and 442 and lock down (terminate) the storage of incoming video information after a predetermined period of time set by a timer in the PC 410. This is similar to the VCR lock down operation described above, except that the PC can do this digitally in order to capture video information for a predetermined period of time associated with a railroad crossing (potential accident) event. Consequently, the RAM of the PC 410 will contain the video information of the scene for a period of time before, during and after the

PATENT OWNER
Ex 2004

activity which necessitated the blowing of the horn and application of the railroad vehicle brakes.

Cox at 5:4-22.

U.S. 2004/0252193 (Higgins), published December 16, 2004 discloses a video capture buffer (e.g., RAM, RAM-disk, tape, and so on) used to record data before and after events occur:

> A system for monitoring and reporting incidences of traffic violations at a traffic location is disclosed. The system comprises one or more digital still cameras and one or more digital video cameras system deployed at a traffic location. The camera system is coupled to a data processing system, which comprises an image processor for compiling vehicle and scene images produced by the digital camera system, a verification process for verifying the validity of the vehicle images, an image processing system for identifying driver information from the vehicle images, and a notification process for transmitting potential violation information to one or more law enforcement agencies. The video camera system is configured to record footage both before and after the offense is detected. The video camera system includes a non-stop video capture buffer that records the preceding few seconds of violation. The buffer holds a number of seconds of video data in memory. When an offense is detected, a timer is started. At the end of the timer period a video clip of the current buffer contents is recorded. The resulting video clip is incorporated with the conventional evidence set comprising the digital still images of the offense with the identifying data of the car and driver.

Higgins at Abstract.

> FIG. 14 is a block diagram that illustrates the main components of video camera system 122. In system 1400, video camera 1402 is a digital video camera that produces video data in PAL, NTSC or other format, which can then be processed to produce streaming video in compressed form such as MPEG, MPEG2, Quicktime, AVI, or similar formats. In one embodiment, the video camera shoots non-stop video footage of the location. The digital video data is stored in a buffer 1404, which can be any type of memory (e.g., RAM, RAM-disk, tape, and so on) that is sufficient to hold at least a portion of the video footage shot by the camera. A detection system 1406 is coupled to the video camera 1402. Upon detection of an offense, a timer 1408 is started. The timer is programmed to stop after a predetermined period of time. At the end of the timer period a clip or "snapshot" of the buffer contents is taken by video clip recorder 1410. The video clip recorder takes the video clip recorded by the video camera for the time period of the timer plus a period of time prior to detection of the offense. The buffer and video clip recorder are used to provide a clip of the offense plus moments immediately before and after the offense. Thus, in order to catch, for example, six seconds prior and six seconds after an offense is detected, the buffer 1404 holds at least twelve seconds of footage in memory. When an offense is detected, the system starts a six second timer, at the end of which it takes a video clip of the current buffer contents and

PATENT OWNER
Ex 2004

> stores it to a persistent memory, such as hard drive 1412. This storage (hard drive) can also be used to store the still images of the offense. Thus, the resulting video record can be incorporated with the conventional evidence set provided by the still cameras.

Id. at [0090].

> FIG. 15 is a flowchart illustrating the steps of capturing a video clip of a detected offense, according to one embodiment of the present invention. In step 1502, the video camera 1402 records a non-stop loop of video of the monitored location. This video data is buffered in buffer 1404, step 1504. The detection system 1406 detects a traffic offense, step 1506. The detection of an offense triggers a timer 1408 to start for a set period of time, step 1508. After the timer period, the timer stops, step 1510. In step 1512, the video clip recorder 1410 captures and clips from the buffer a video clip running from a set time prior to the offense to the end of the timer period. The video clip is then stored in a memory, such as hard drive 1412, and associated with the still camera data of the offense, step 1514.

Id. at [0091].

US 2004/0150717 "Page," published Aug 5, 2004, discloses a memory buffer that is used to record pre-event data:

> A digital video surveillance system for a law enforcement vehicle comprises a video camera mounted on the law enforcement vehicle and positioned to view an incident. A memory buffer records video signals from the video camera. A controller generates record and playback signals to record and to display the video signals. A digital video recorder is responsive to the record signal to record the video signals from the memory buffer on an optical medium and to the playback signal to reproduce video signals recorded on the optical medium. A vault encloses the digital video recorder. A battery provides backup power to the digital video surveillance system. The optical medium may be a DVD disk. A watermark may be included with the digital recording.

Page at Abstract.

> The digital video surveillance system of the present invention includes a video server in a law enforcement vehicle which allows recording to various digital optical media including DVD RAM disks. Recording to these media in a moving vehicle and in all-weather conditions is possible by shock-mounting the drives and providing environmental assistance for heating and cooling a lockable protective enclosure in which the drives are encased. This system includes a memory buffer that is recording at all times. When the recorder is activated, the memory buffer contents, including video and audio, will be recorded onto the DVD RAM disk. This ensures that the activity occurring just prior to the activation of the system is recorded as well. The system further provides a method to capture or receive

PATENT OWNER
Ex 2004

> snapshots and output them to or receive them from a wireless transmitter such as a cellular modem for missing persons or suspect identification, for example. Forward-facing and interior cameras are mounted inside an overhead console to reduce the obstruction to the driver and to eliminate the chance of interfering with a passenger side air bag.

Id. at [0005].

> The video server board 46 includes from 4 to 512 megabytes of RAM, which is used as a history buffer. The system constantly stores information from the cameras and audio input in the RAM on the video server board 46 which stores seventeen to thirty seconds of video history for a 4 Mb history buffer and up to three minutes or more for a 512 Mb history buffer depending on the resolution of the video recorded, for example. The history buffer is a circular FIFO buffer which allows events to be recorded that occurred prior to the system receiving the record command. When the record function is activated, the history buffer prior to activation is transferred to the DVD RAM drive to record the incident up to the point when the record signal was received. Data in the history buffer is transferred to the DVD RAM disk at a data rate of approximately 2.7 Mb per second. If the history buffer is full when recording starts, this transfer occurs in approximately three minutes, for a 512 Mb history buffer. Thereafter, video and audio data is collected in the history buffer before being transferred to the DVD RAM disk in packets. When the stop recording command is received, the final five to six seconds of data in the history buffer is transferred to the DVD disk and recording on the disk is stopped. Data continues to accumulate in the history buffer after recording stops.

Id. at [0046].

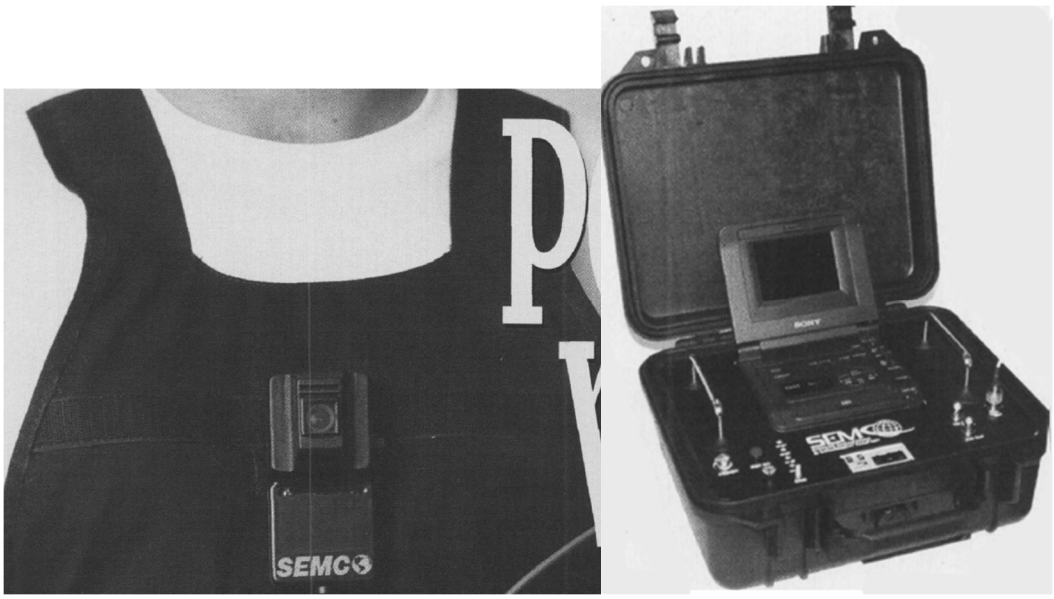
Body-worn Cameras Were Known In The Art

Prior to the alleged invention, it was known in the art to use a body-worn camera in conjunction with an in-car video system. For example, the CopCam by Semco Corporation included a body-worn camera that is worn at chest level. POLICE VIDEO Up Close and Personal, LAW and ORDER, [MOTOROLA_011610-MOTOROLA_011613], August 1999 ("Police Video") at 1-2 . "CopCam…uses technology developed in military applications. *Id*. at 1. "Semco brought the system to law enforcement with the idea of recording not just a car-mounted view but also what the officer was seeing." *Id*. "[T]he in-car video system is actually a combination of two separate video systems that interact with each other." Sheriff Baca Introduces In-Car Video

PATENT OWNER
Ex 2004

System and "Cop-Cam," County Digest (Country of Los Angeles), [MOTOROLA_011602-MOTOROLA_011609], March 2000 ("Cop-Cam") at 7. "The first is the 'Car-Cam' system, in which the video camera is mounted in the patrol vehicle, taping the incident through the front windshield." *Id*. "The second is the 'CopCam' system, in which the video camera is mounted on the deputy's chest, videotaping the incident from the deputy's viewpoint." *Id*. "When activated, this system has the ability to tape incidents as they happen, regardless of where they occur in relation to the patrol car." *Id*.

"[Sgt. Craig Carter, Escondido, CA Police Department] explained, 'The unit we have has a camera in the car and a camera on the lapel of the officer. The officer can switch between the cameras. The result is, you use the system more often than if it was just in the car. For instance, in a domestic violence situation, you can go into a house and transmit back to the car'" Police Video at 1. "The camera lens is now attached to the lapel of the shirt, and there's a vest with transmitter and battery worn under the shirt." *Id*.



Id. at 1-2.

> Here's how the new system could work in a real world example. An officer spots a car being operated in an erratic manner. The in-car camera starts to record the driver's actions. As the car stops, the officer taps a button to activate the auto-zoom feature. The unit zooms in, focuses on the vehicle's license plate, and then zooms back out to record the full scene as the officer approaches. … At the driver 's window, the officer can choose to activate his body camera. If he does so , the recording unit in the patrol car automatically switches to receive the signal of the camera worn by the officer. The camera, worn at roughly chest level, records a clear picture of the faces of vehicle occupant s as well as the interior of the car.
>
> Let's assume that the officer obtains consent from the driver to search the car (all recorded on tape) and, as a result, finds a hand gun under the front seat which turns out to be stolen.
>
> ***
>
> The value of this type of information is obvious. "I had a case where I had a consensual search but the suspect later recanted in court" Carter said. "When you can show it on video, it really helps. The same thing applies to traffic tickets. Once I'm at the window, I have a picture of the driver's face and I have a recording of anything he says."

Id. at 2. "If we go into a house looking for a suspect, as in the service of a search warrant, that's different and the videotape can be invaluable." *Id*. at 3.

Defendants contend that, to the extent the primary references identified in these Invalidity Contentions do not anticipate the Asserted Claims, it would have been obvious to combine any of the references, systems, concepts, or technologies discussed in this Section with those primary references. Defendants also reserve the right to rely on the discussions of the state of the art and prior art in each of the Asserted Patent specifications and their file histories including file histories of related patents in explaining the state of the art. Defendants further expressly reserve the right to supplement their summary of the background and state of the art, including, for example, with information from any of the authors or named inventors on any of the prior art references, by personnel familiar with systems based on any of the prior art references, or any prior art systems related to prior art references, or by technical experts retained on behalf of any party. Defendants

PATENT OWNER
Ex 2004

also expressly reserve the right to rely on any admissions by any of the named inventors, entities with which they were associated, and Plaintiff, regarding the state of the art.

Various Memory Options for Storing Events Was Known In The Art

US 2005/0088521 (Blanco 2), published Apr. 28, 2005, discloses that prior systems included:

> Vehicle-mounted surveillance systems, also termed in-car video systems, are seeing increased use in the security industry and law enforcement community as an effective means to provide an indisputable video and audio record of encounters involving officers and citizens. In these systems, a video camera is typically mounted on the police car's dashboard or windshield and is generally arranged to have a field of view of the area to the immediate front of the car. The field of view approximately corresponds to what an officer would see when seated in the car's front seat.
>
> The video camera is operably coupled to a video recorder, such as a video cassette recorder ("VCR") or digital video recorder ("DVR"), mounted in the police car, often in the trunk. A video recording may be started manually by the officer, or in some systems, the video recording is started automatically when, for example, the officer activates the police car's emergency systems (such as overhead lights and/or sirens), or when a vehicle speed-measuring radar unit is operated.

Blanco 2 at [0002]-[0003].

> While current in-car video systems perform very well in many applications, recording media currently used with in-car video systems, including analog video tape and digital storage media like hard disk drives, are bulky and may present storage and other logistical issues in managing the recording media. The size of recording media and associated video recorders can present space utilization issues in some vehicle models as well.

Id. at [0007]. Blanco 2 described the benefit of using solid state memory devices such as Flash:

> An inventive system and method is provided by an in-car video system that uses a type of electrically erasable programmable read-only memory known as flash memory to store video of an incident or event. In an illustrative embodiment of the invention, a digital video recorder and video camera are fixably mounted in a vehicle such as a police cruiser. An event of interest is captured by a camera and the resulting video stream is converted into a form that writable to a flash memory. The video recorder writes the video to flash memory to thereby store a record of the event on the flash memory as a storage medium.

PATENT OWNER
Ex 2004

Id. at Abstract. "The type of flash memory preferentially used in the illustrative embodiment of the invention is known as a CompactFlash card." *Id*. at [0011].

> Advantageously, the invention creates a robust in-car video system having a large amount of video storage combined with enhanced system packaging that is enabled through the very small form factor of the flash memory. Since flash memory is a solid state device using no moving parts, (i.e., the memory relies on the use of electronics instead of mechanical systems) it is inherently reliable.

Id. at [0012].

> Flash memory may endure extreme temperatures and retains data even without a continuously applied power source. Users may easily insert and remove flash memory from the video recorder and store additional flash memory card in the vehicle in a small amount of space. Because of its extremely small size, flash memory provides efficient and dense storage and is ideal as a removable media for archiving video recordings in a storage area away from the vehicle. The use of flash memory as the recording media may also help to reduce the costs of maintaining in-car video systems because relatively fragile and complex VCRs and DVRs are eliminated from the inventive in-car video system.

Id. at [0013].

> Particular advantage may be realized in many applications of the invention by using "flash memory" which is a special type of EEPROM that can be erased and reprogrammed in blocks instead of one byte at a time. This feature makes flash memory generally "faster" than other types of non-volatile memories. In accordance with the invention, flash memory is well suited to in-car video system applications as a result of this fast speed at which data can be stored and accessed.

Id. at [0021].

2. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914

a. Exemplary Combinations

The following combinations are merely exemplary and provided as examples of combinations that render the Group 1 Asserted Claims invalid. Defendants' identification of exemplary combinations does not preclude Defendants from identifying other invalidating combinations as discovery progresses and based on, for instance, any changes permitted to

PATENT OWNER
Ex 2004

Plaintiff's infringement contentions, fact discovery (including that from third parties), claim construction positions taken by Plaintiff, or any order by the court on claim construction.

Exemplary Combinations	Patent / Claim(s)
Chen in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Ely in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Fielder in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Fiore in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Lagassey in view of references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Plante in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Silvernail in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Vanman in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Chen in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Ely in view of references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Fielder in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7

PATENT OWNER
Ex 2004

Exemplary Combinations	Patent / Claim(s)
Fiore in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Lagassey in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Plante in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Silvernail in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Vanman in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Chen in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 1 Asserted Claims
Ely in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Fielder in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Fiore in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Lagassey in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Plante in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Silvernail in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Vanman in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e	All Group 1 Asserted Claims
Chen in view of any of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3

PATENT OWNER
Ex 2004

Exemplary Combinations	Patent / Claim(s)
Ely in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Fielder in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Fiore in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Kawasaki in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Kirmuss in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Lagassey in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Plante in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Silvernail in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Vanman in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Yerazunis in view of references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.b	'034 patent, claims 1, 12; '822 patent, claims 21, 22; '471 patent, claims 2, 3
Chen in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.c	'034 patent, claim 7
Ely in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Fielder in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Fiore in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7

Exemplary Combinations	Patent / Claim(s)
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Lagassey in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Plante in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Silvernail in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Vanman in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.d/III.B.2.e in further view of any of the references discussed and referenced in Section III.B.2.	'034 patent, claim 7

b. References Disclosing Wireless Transmission of Files to a Remote Memory

As of the earliest priority date for the Group 1 patents, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory. As an example, the '034 patent characterizes WO 2006/044476 to Vanman as disclosing that in order to "save data in the buffer, the user of the Vanman device needs to transfer important portions of the buffer wirelessly to a central office or physically to a DVD disc." '034 patent at 1:35-45. Additionally, a person of ordinary skill in the art would have known, for example, that wireless transmission of important data allows for preservation of the data while freeing up memory on the device for subsequent recordings. It also allows for summoning immediate assistance to the scene of an incident. Furthermore, particularly in law enforcement applications, it is desirable for evidence preservation to remove human interaction from the transfer of data from a recorder to a central evidence repository.

PATENT OWNER
Ex 2004

U.S. Pat. No. 8,350,907 ("Blanco") "is related generally to surveillance systems, and more particularly to a method of storing digital video captured by an in-car video system." Blanco at 1:6-8. "Referring to FIG. 1, which provides a simplified block diagram of a first method of long term video storage, a large digital storage medium 110 (for example, a hard disk drive having storage capacity of greater than 50 gigabytes) is utilized in a vehicle 120, such as a police cruiser, to record and store many hours of video." *Id*. at 3:45-50. "The occurrence of external triggers or incidents markers such as the emergency Lights, Siren, Car door opening, etc., that may be part of the video record, may also be searched in some applications of the invention." *Id*. at 4:37-40.

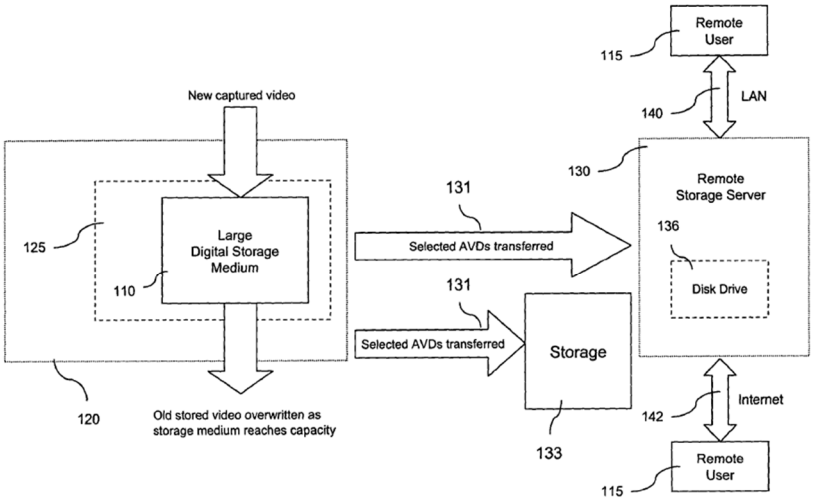


FIG 1

Id. at Fig. 1. "Typically, the large digital storage medium 110 would be incorporated into an in-car video system, designated by reference number 125 in FIG. 1 which typically includes a DVR, camera, microphone, control unit and monitor (not shown in FIG. 1)." *Id*. at 3:50-54. "Once the large digital storage medium 110 reaches its maximum capacity, the oldest video is erased (i.e., overwritten) and its space is taken by the newest video as shown in FIG. 1." *Id*. at 3:57-60. "[S]elected video recordings, for example those designated as being of interest or of other importance, may be transferred to conventional storage media…(collectively designated by

reference numeral 131 in FIG. 1)." *Id*. at 3:62-64. Figure 3 depicts that "the removable media may be replaced with a wireless link, enabled for example, through the use of a wireless transmitter 310 as shown." *Id*. at 4:41-44.

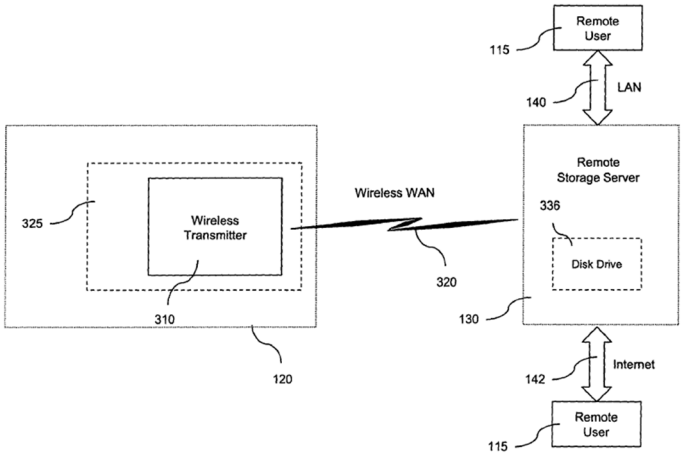


FIG 3

Id. at Fig. 3. "The video data is transferred to a storage server 130 coupled to the WAN." *Id*. at 4:46-47. "The third method [Fig. 3] described above is often the most advantageous in many applications." *Id*. at 4:50-51. "It often requires the least amount of interaction from the officer which can be desirable from the viewpoint of training reduction and enhanced evidence preservation." *Id*. at 4:51-54. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pub. No. 2004/0008255 ("Lewellen") "generally relates to video systems, and more particularly relates to video systems for vehicles such as police cars." Lewellen at [0002]. Lewellen discloses that "a vehicle video system includes a small camera in the passenger area." *Id*. at [0010].

> The vehicle video system records video information on a digital video recorder that uses digital media such as a hard disk drive, recordable CD (CD-R), rewritable CD (CR-RW), or writable Digital Video Disc (DVD). The vehicle video system includes a local wireless interface, such as a Bluetooth-compatible interface, that automatically connects to a compatible device in the parking area of the vehicle that is coupled to a database. In this manner, the digital video information collected by

> the vehicle video system is automatically transferred to the database when the vehicle is parked, removing the need for any human intervention for the logging and cataloging of video tapes. The local wireless interface of the vehicle video system also allows other devices, such as a handheld device or a vehicle video system in a different vehicle, to access the stored digital video information.

Id. "Vehicle video system 300 includes a local wireless interface 390." *Id*. at [0031]. "Local wireless interface 390 provides a significant advantage over the prior art vehicle video systems." *Id*. "Devices enabled with Bluetooth wireless technology will be able to: free electronic accessories and peripherals from wired connections" and "exchange files." *Id*. at [0035]. "Products that incorporate a Bluetooth interface are already on the market." *Id*. at [0040]. "Nokia Corp. is selling its Bluetooth 6310 phones in Europe, and are expected to be available in the United States sometime in 2002." *Id*. "Bluetooth wireless technology…provides links between mobile computers, mobile phones, other portable handheld devices, and connectivity to the Internet." *Id*. at 32.

"The benefit of providing the local wireless interface 390 is that digital information recorded by the digital video recorder 370 may be automatically transmitted and received to and from compatible devices." *Id*. at [0043]. "As shown in FIG. 5, one example of a compatible device is a parking area data transfer mechanism 510." *Id*. "A second example of a compatible device is a portable data transfer mechanism 520." *Id*. "A third example of a compatible device is a vehicle video system 300A in a different vehicle." *Id*. For example, "[i]n response to the upload command, the vehicle video system transmits digital data to the parking area data transfer mechanism (step 860)" including "recorded digital video data." *Id*. at [0049]. "[T]he present invention relieves the law enforcement officer from the chore of handling video tapes." *Id*. at [0045].

PATENT OWNER
Ex 2004

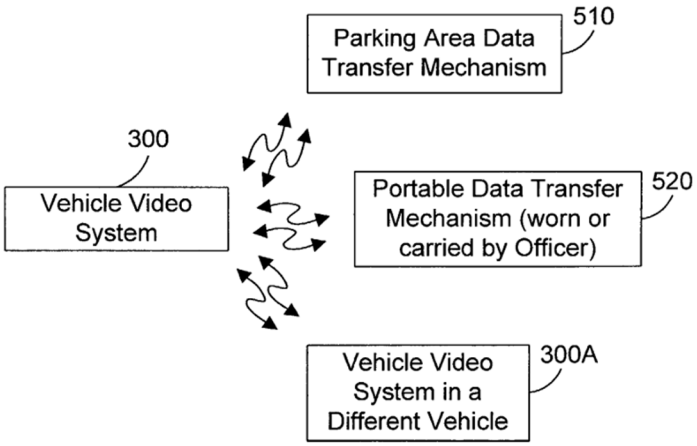


FIG. 5

"Referring back to FIG. 5, a second suitable wireless device that is compatible with the local wireless interface 390 in the vehicle video system 300 is a portable data transfer mechanism 520, which may be worn or carried by a law enforcement officer." *Id*. at [0046]. "Such a portable data transfer mechanism 520 could act in the same manner as the parking area data transfer mechanism 510, exchanging digital information in both directions as needed." *Id*. "Note, however, that the portable nature of the portable data transfer mechanism 520 allows for easily exchanging digital information with the vehicle video system 300 in the field, without having to return to the parking garage." *Id*.

> During the chase, let's assume that the police car is wrecked. If the only data transfer mechanism were in the parking garage, the car would have to be towed to the parking garage to retrieve the digital information recorded by the digital video recorder 370. However, with a portable data transfer mechanism 520 or using a vehicle video system in a different vehicle 300A, the stored digital information in the wrecked police car can be uploaded to a different device, which can then transfer the data to the central database. We see from this simple example that exchange of digital information in the field is a significant advantage of the preferred embodiments.

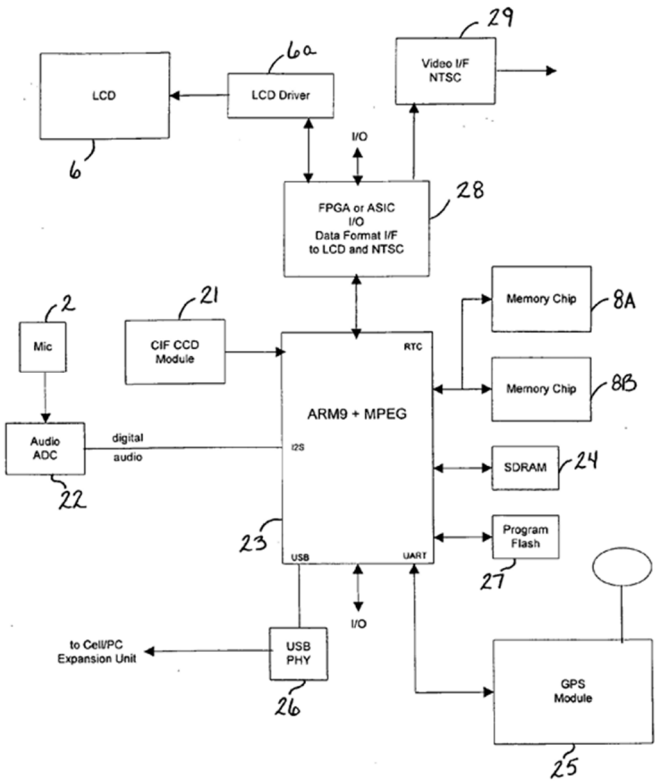
Id. at [0047]. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pat. No. 8,081,214 ("Vanman") "is directed to a video surveillance system, and in particular, by way of example and not limitation, to a Video Surveillance system adapted to be mounted in a law enforcement vehicle for producing a permanent digital evidentiary record…." Vanman at 1:13-19. "The system of FIG. 1 may also be provided with an Ethernet interface 145 that allows for communication between either a wired or wireless Ethernet-connected device and the microcontroller 90." *Id*. at 7:19-22. "The Ethernet interface 145 may be used, for example, for transmitting encoded audio and video, as well as associated metadata, to a central office." *Id*. at 7:19-21. The WatchGuard Video DV-1 Police In-Car DVD-Video Recorder ("DV-1") product similarly included an Ethernet port. WatchGuard DV-1 Product Specifications, WatchGuard Video, [MOTOROLA_005498-MOTOROLA_005512] November 22, 2003 at 4 (main board includes "Ethernet"). Provisional App. No. 60/617,988 ("Vanman Provisional") similarly discloses implementation details for the DV-1 product regarding the Ethernet functionality. Vanman Provisional at 14 (showing "Ethernet" connection); 17 ("UNDERSEAT ETHERNET EXTENSION"); 55 ("Ethernet"); 65 ("If the application is loaded on a laptop computer, and the laptop is plugged into the DV-1 LAN connector, the user would be able to query and copy data from a system's hard drive directly, as well as directly updating the firmware and user settings."). Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pub. No. 2005/0078195 ("Van Wagner") discloses "a mobile recording device including: a flexible camera head for capturing video stream data in real time, a microphone for capturing audio data in real time, a circular buffer for continuously storing the video stream data and the audio data; and a wireless transceiver for transmitting the video and audio data in real time to a remote location." Van Wagner at [0009]; Figs. 2, 4B.

PATENT OWNER
Ex 2004

FIG. 2



Van Wagner at Fig. 2. "The wireless card slot utilizes existing wireless technologies, like PCcard cellular modems and 802.11 cards, to transmit video and audio as a data stream to a remote monitoring facility." *Id*. at [0092]. "In one embodiment, the cellular capability is provided via an expansion module pluggable to the main unit." *Id*. at [0071]; Fig. 3. "In this embodiment, the MPEG stream is received from the main unit via a USB interface 31 (or other interface) by the expansion module, as shown in FIG. 3." *Id*. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pat. No. 6,995,668 ("Junqua") discloses "a wearable, computerized apparatus for use with law enforcement has an evidence collector adapted to collect evidentiary information of a type collected according to law enforcement procedures and useful for identification of a suspect." 1:36-40. "A wireless communications link communicates the evidentiary information and the safety information to a centralized component of a distributed communications system to assist in

identifying suspects and dispatching assistance." *Id*. at 1:42-46. "A vehicular component having an on-site camera can receive data from the wearable, computerized component via a wireless connection, automatically activate the camera at times of stress and/or distress, and forward collected information off-site to a centralized, dispatch facility via a wireless connection. *Id*. at 1:42-52-58.

> Another way that apparatus 10 can communicate with other components of the system is by using a mid-range wireless link, such as radio wave. This mid-range wireless link can be used to communicate with a vehicular component of the system, such as a police car 40 or motorcycle 42. Thus, suspect biometric data, sensed officer reactions, stimuli, scanned input, text input, voice input and/or sounds and images from various on-site cameras 44A–C can be communicated to and from various on-site components of the distributed communications system.

Junqua at 3:12-21; Fig. 2.

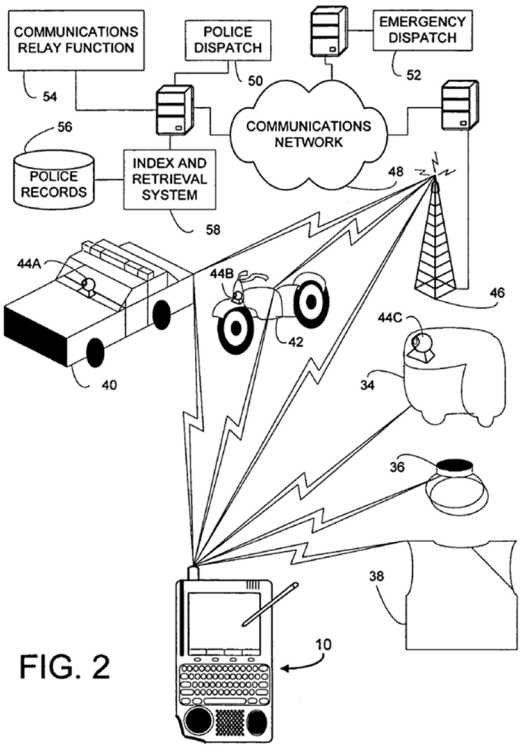


FIG. 2

Junqua at Fig. 2. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pub. No. 2001/0005217 ("Hamilton") discloses a "device for remote information download and transfer for downloading a secure, permanent record of criminal activity and/or accident evidence relating to a vehicle for evidentiary purposes which may be … saved directly onto the downloading device. Hamilton at Abstract. Hamilton "contemplates an off-board downloading device for accessing information on a Recording System and for viewing and/or transferring that information to an off site location." Hamilton at [0101]. Hamilton further discloses "the information recorded from certain monitors and transducers located on the Recording System can be downloaded by the interface 18 from hard drive 34 located on the Recording System and superimposed on recorded video information also downloaded from hard drive 34 located on the Recording System." Hamilton at [0030]. "In a preferred aspect, the remote downloading device has at least one transceiver for accessing, downloading, and remotely transmitting information to an off site location, such as a base station, a hospital, an insurance company, law enforcement, a rescue vehicle, or the like." Hamilton at [0015]. "The transceiver receives signals from a remote unit, such as a Recording System, which allows the device to transmit recorded and/or stored information directly from the safe box or hard drive located on the Recording System to an off site location and/or instantaneously as it is generated." *Id*. Hamilton further discloses that the "transceiver 40 can comprise a direct satellite uplink, RF radio, modem, cell phone, or the like." Hamilton at [0026].

PATENT OWNER
Ex 2004

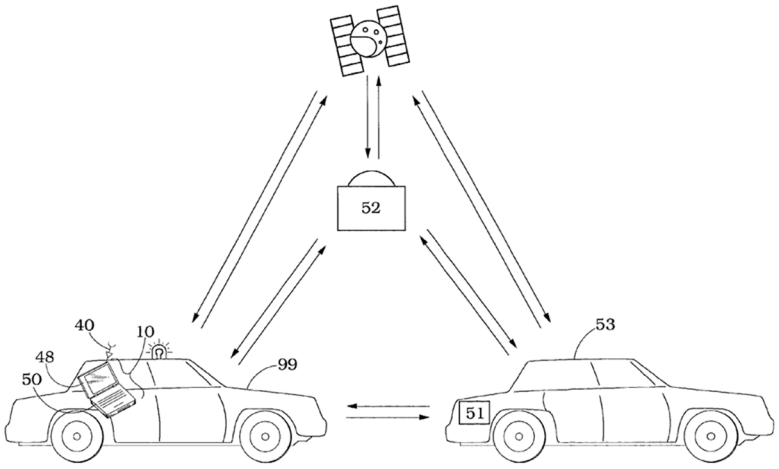


FIG. 2

Hamilton at Fig. 2. In Fig. 2, "the download device 10 is implemented in a form that is similar to that of a laptop computer with a visual display monitor 48 and keyboard 50." Hamilton at [0031]. "The download device 10 may be self-contained with, for example, a phone jack and/or a modem hooked to a mobile phone or SET for direct satellite transmission via transceiver 40." *Id*. "In the depicted embodiment, the Recording System 51 is located in a vehicle 53, and the download device 10 is located remotely from the Recording Systems 51 such as, for example, in a police cruiser 99." *Id*. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

PCT Pub. No. WO2004/036926 ("Pearlson") discloses "methods and systems for acquiring, storing, and distributing video and telemetry." Pearlson at 1:28-29. "One embodiment is a recording and transmission system comprising: a recorder mountable in a police vehicle configured to record video and meta-data synchronized with the video, wherein the recorded video includes a plurality of segments having fixed lengths, the recorder including a wireless transmitter configured to wirelessly transmit the recorded video segments and meta-data, wherein the meta-data includes: data related to vehicle status; subjective time information; objective time information; serial data." Pearlson at 2:1-6. "One embodiment of the recorder 100 provides event-based recording that

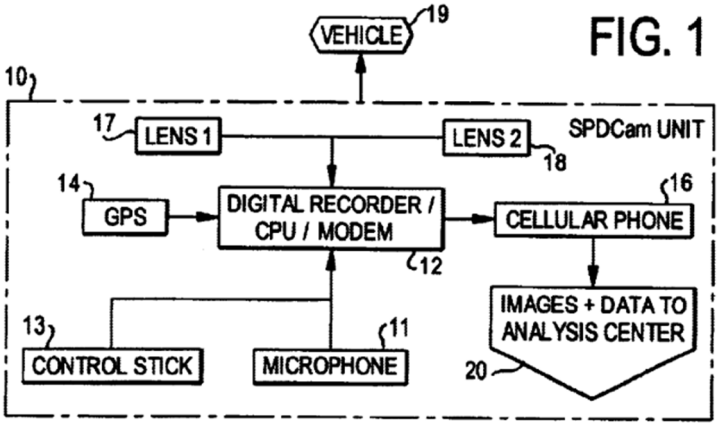
enables users to activate a recording session by either pressing a button or activating another device used as an event trigger such as a vehicle light bar, or an alarm contact or other sensor." Pearlson at 10:3-9. "In one example embodiment, a ring buffer in a recorder, such as recorder 100, captures video, audio and data until an instruction or trigger to start the recording process occurs." Pearlson at 8:18-21.

The system includes a mobile video/audio data recorder 100 which records high quality video/audio and serial data telemetry while simultaneously transmitting specially formatted live video/audio and information to personnel using a variety of reception devices or terminals." Pearlson at 7:3-7; Fig. 1. For example, access to and display of videos and meta-data can be provided using a standard browser…and a standard media player…executing on a personal or server computer, personal digital assistant, cell phone, and the like, thereby lowering the client cost and easing maintenance. Pearlson at 5:14-18. Pearlson further discloses that "the frame rate, bit rate and resolution for transmission can be selected based on the wired or wireless network and the receiving terminal." Pearlson at 7:23-24. "For example, some devices, such as palm-held personal digital assistants (PDAs) and hybrid cell phones may have limited display resolution and processor power." Pearlson at 7:24-26. "In applications where such devices are used to view the video, such as by remote field personnel performing surveillance, the recorder l00 maintains compatibility with the target device by optionally formatting video specifically for the target device." Pearlson at 7:26-29. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pat. No. 6,690,294 ("Zierden") discloses "a method for capturing images of a vehicle and/or vehicle operator suspected of a traffic violation, determining the time and geographic location of the suspected violation, transmitting the images and other data to an analysis center, issuing citations to violators and deriving revenue therefrom." Zierden at 1:17-23. "The SPDCam

PATENT OWNER
Ex 2004

system comprises a color digital imaging device (SPDCam device) connected to a global positioning satellite (GPS) system and a cellular telephone network." *Id*. at 3:31-33. "Referring now to the detail in the drawings, FIG. 1 is a block diagram of a digital imaging device (SPDCam device) 10 for capturing the image of a target vehicle 19 that is suspected of violating a traffic law." *Id*. at 4:11-15.



Id. at Fig. 1. "The SPDCam device 10 comprises two cameras, identified as lenses 17 and 18…." *Id*. at 4:15-16.

> In operation, the lenses 17 and 18 constantly record images, with the most recent time period, e.g., 120 Seconds, of images being retained in the computer memory at any given time. As new images are acquired, older ones are erased. When a target vehicle is identified, the system operator activates an 'Event' on the SPDCam device 10 to begin collecting data for the target vehicle. When the 'Event' is initiated, the prior 120 seconds of images are permanently stored, and subsequent images of the target vehicle are continuously captured and stored in the computer memory until the operator 'Ends' the event. GPS data and the entirety of the audio recording is retained from the start of the event to the end thereof, and stored with the images.

Id. at 5:8-20. "[S]witches may be provided for selecting between the video mode and the photographic mode of operation." *Id*. at 5:24-25.

"The computer 12 processes, stores, and transmits the images and the geographic and audio data to an analysis center 20 via a cellular telephone 16." *Id*. at 4:24-26. For example, "[a]n 'Event' key permanently stores the most recent 120 seconds of images while continuing to record until an

'End/Store' key is pressed to stop the recording of the images." *Id* at 5:30-33. "All the images are stored in the memory of the computer 12." *Id*. at 5:33-34. "A 'Submit' key activates the cellular telephone 16 connected to the computer 12 which transmits the images and other collected data to the analysis center 20." *Id*. at 5:39-42. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pat. No. 6,831,556 ("Boykin") discloses "[a] surveillance system includes a device for capturing video, audio, and data information." Boykin at Abstract. "The device is provided in a first location, such as a vehicle." *Id*. "A server is provided for integrating and storing the captured information in the vehicle." *Id*. "The captured data is stored in onboard hard drives, or other storage facilities, such as flash memory, solid state memory, etc." *Id*. at 1:50-53. "The server may be a mobile server which is capable of transmitting the captured information from the vehicle to a second location, such as a building." *Id*. at Abstract. Boykin discloses that "data is digitally captured and processed from any one or all of the cameras for integration and storage in the mobile server 200 (see FIG. 2) of the CMDIS unit 150." *Id*. at 3:14-17.

PATENT OWNER
Ex 2004

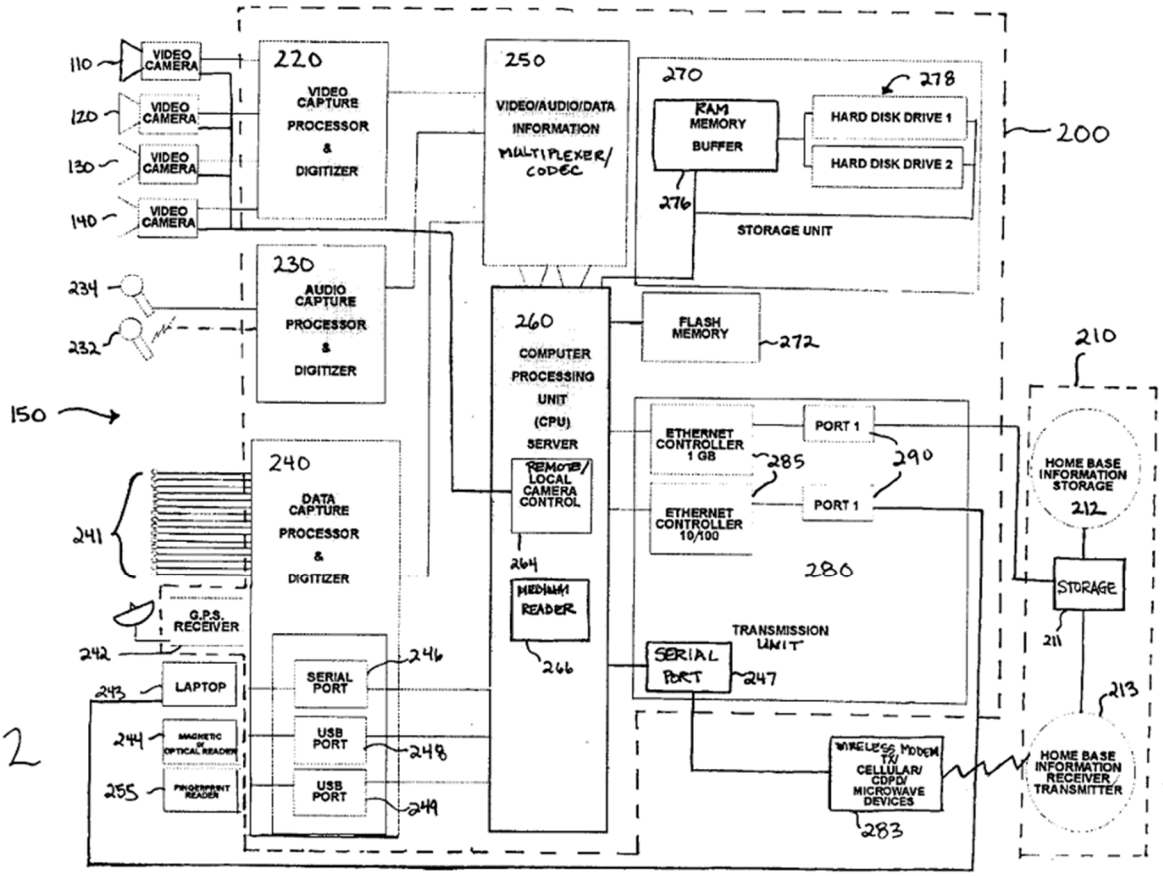


FIG. 2

Id. at Fig. 2.

"More specifically, the processor CPU 260 commands the RAM memory buffer 276 to transmit the stored information to the permanent storage memory, e.g., the hard drive 278, upon the triggering of a particular event." *Id*. at 5:15-18. "Such an event may include, but is not limited to, the activation of a siren on the police car 100, the removal of a gun from its gun rack, sudden acceleration of the vehicle, etc." *Id*. at 5:18-21. "All of the information which was recorded during the specified time and saved to the RAM memory buffer 276 is then digitally saved to the permanent storage memory, e.g., one of the two onboard hard disk drives 278." *Id*. at 5:21-25. "Thus, the surveillance system records an event, as well as a specified time before the event." *Id*. at 5:25-26. "The present invention is not limited to the use of hard disk drives." *Id*. at 5:38-39. "Solid state memory or other types of non-volatile, non-rotating memory devices may be

substituted for the hard disk drives, e.g., flash, etc." *Id*. at 5:39-41. "The invention may utilize any type of memory buffer, or may be a flash memory, etc." *Id*. at 5:43-44.

"During recording and playback of the recorded data, digital coding provides tags for future search parameters." *Id*. at 3:7-8. "For instance, searchable identification code may be embedded in the data which is associated with a particular event." *Id*. at 3:9-10. "Thus, the data can be easily retrieved for evidentiary purposes at a later time without necessitating labor intensive searches of the recorded material." *Id*. at 3:11-13.

Boykin further discloses that a "serial port 247 can be connected to receiving/transmitting device 283 (one of a variety of wireless modem, cellular, satellite, and microwave devices) that sends radio signals back to the home base or precinct 210." *Id*. at 4:13-17. For example, "[w]hen the vehicle 100 returns to the home base 210, it is connected via a high-speed, high-capacity Ethernet controller 285 (such as a 3COM 1 GB controller) to the home base server 211 via port 290 and the digitally stored video/audio/ related information (i.e., data stream) is data dumped to a home base master storage repository 212." *Id*. at 6:4-9. "The data can be dumped through copper wire, wireless transmission, fiber optics, laser or other means." *Id*. at 6:9-11. "With current systems, at the end of a shift the officer is required to remove all videotapes and turn them into a storage facility." *Id*. at 8:5-7. "However, with the present invention, the digitally stored material is data dumped via various down load devices including wireless transfer, without human contact." *Id* at 8:7-10. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

"The Patrol Video Project," LAW and ORDER, July 2004 article describes the Ranger digital video recorder for patrol cars from Sequent. Special Report: The Patrol Video Project [MOTOROLA_007581-MOTOROLA_007602] at 10-12. "Sequent's system records digital video data onto a dedicated computer and hard drive located in the vehicle's trunk." *Id*. at 10.

PATENT OWNER
Ex 2004



Id. at 11.

> They park the cars in their motor pool lot, and a 2.4 GHz Wi-Fi access point (one of three at Riverside PD) senses the presence of the car. The system queries the car's server to see if there is video data to offload, and if the data is present, the files are downloaded wirelessly to an assembly server located in a room adjacent to the motor pool. If the download is interrupted by the car moving out of range again, it just resumes when the car comes back again.
>
> Once the video files have been transferred and verified, the assembly server tells the mobile unit to delete the files from its hard drive.
>
> Sgt. Jim Walters at Riverside PD maintains that the process is smooth and requires no intervention by the officer, and that it has yet to lose any video.

Id. "Sequent is routinely transferring an hour of video from cars to the server, wirelessly, in under five minutes." *Id*. at 12. Therefore, as of at least July 2004, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

U.S. Pat. Pub. No. 2002/0191952 ("Fiore") "relates to a data recording and playback systems for monitoring processes or occurrences of events which allows the replay and/or analysis of a time sampled signal." Fiore at [0003]. "FIG. 2 shows a schematic illustration of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0043]. "As can be seen, the signal processor 10 is in communication with monitoring device 6 that provides

an input signal data to the signal processor 10 such as a video, audio or other type of signal." *Id*. "The network 4 may be any type of a network such as a local area network, wireless network, wide area network, or the Internet." *Id*. at [0039]. "[I]n the networked embodiment of the present invention as shown in FIGS. 1 to 4, the network allows transfer and access of data utilized and stored by the data recording and playback system of the present invention." *Id*. at [0077].

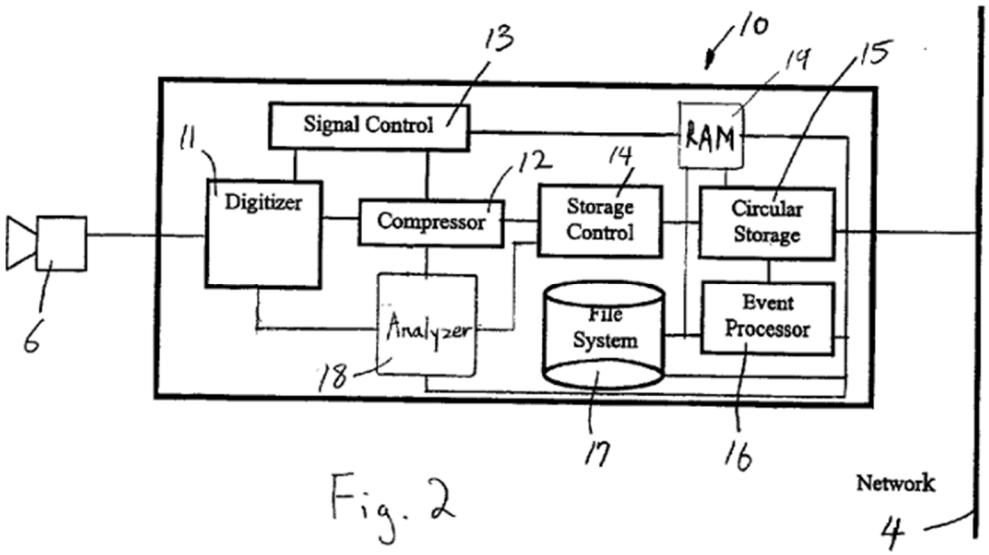


Fig. 2

Id. at Fig. 2. Therefore, it was known to have a wireless transmitter functionally coupled to a local memory used to transmit files to a remote memory.

Additionally, the charted references and products described in Section III.A.1 also disclose wireless transmission of files from a local memory to a remote memory.

c. References Disclosing Remote Memory on Mobile Phone

As of the earliest priority date for the Group 1 patents, it was known to transmit data from a local memory to a remote memory located on a mobile phone. For example, wireless transmission of important data allows for preservation of the data while freeing up memory on the device for subsequent recordings. It also allows for summoning immediate assistance to the scene of an incident. And transmitting events to a mobile phone would allow further transmission of

events through a cellular network, which was readily available at the time, to a central repository for permanent storage and evidence preservation.

Before the earliest priority date for the Group 1 patents, phones were advanced enough to allow storage of video content and were used for a variety of purposes including surveillance applications. A published paper in 2006 by Bing-Fei WU et al., "A Practical Home Security System via Mobile Phones" ("WU"), from the Proceedings of the 5th WSEAS International Conference on Telecommunications and Informatics, Istanbul, Turkey, May 27-29, 2006 (pages 299-304), stated the following: "Since mobile phones have become prevailing, while house and property security demands are continually increasing, the integration of the mobile phone and a surveillance system becomes more meaningful so that people can know the security of their properties anytime, anywhere. Mobile phones are at present, quite ubiquitous and increasingly sophisticated. A mobile phone can not only be treated as a communication unit, but as a camera, a web browser, a music box, a game platform, or even a wireless remote controller, since so many services are provided on a mobile phone. Corcoran et al. proposed a photography service which offered the possibility to access and manipulate uploaded pictures directly by Wireless Application Protocol (WAP) or iMode services via mobile phone [7]. They also presented a combined battery-charger and picture upload unit to solve the two-hour talk-time limitation of a fully charged mobile phone in their investigation. Nikolova et al. developed a gateway to enable the control of consumer electronics devices connected to the home network from a mobile phone. The gateway intermediates are wired between the home network and a wireless communication network using Home Audio Video interoperability (HAVi) and WAP specification, respectively [8], named HAVi-WAP UI. Recently, a video clip system [9] has developed a way to transfer the video stream to a mobile phone through Ethernet from PCs." WU at 1.

PATENT OWNER
Ex 2004

"This manuscript addresses the design and implementation of a practical home security system (PHSS). This system realizes its mobile surveillance via mobile phones by the planted Java applet. The challenge is that PHSS works independently under the existing Internet Service Providers (ISP) and telecoms. End-users can monitor their home and properties anywhere and anytime on the screen of their mobile phone. Furthermore, PHSS can be also applied to vehicle surveillance without the restrictions of ISPs. This system has been completed and verified in houses and vehicles." *Id.* at Abstract. "Since more and more mobile phones support Java programming, the J2ME Java version is addressed for developing applications on mobile devices. But the API of J2ME is not as complete as that of J2SE. There are still many restrictions in developing the Java program. The socket programming is used to establish the connection between ESS and the mobile phone. The server-push method is applied in the data transmission between them. That is, the mobile phone will not download the files until the server is ready for the downloading. Figure 6 shows the state chart of this method and Fig. 7 is the processing flowchart of this program on a mobile phone." *Id.* at 4. "Users can download the continuous real-time images to their mobile phones from ESS anywhere if this Java applet has been embedded in their mobile phones." *Id.* at 4. "The actual average bandwidth of GPRS is approximately 8K to 10K bits per second for the downloading data transmission rate. The QCIF JPEG image size is approximately 1K Bytes so that the mobile phone can download the compressed image data from ESS display the decoded JPEG image in three seconds per image by our developed Java applet." *Id.* at 5.

Phones were also used to provide Internet connectivity. For example, a research paper in 2003 by S.C. Hui et al., "Remote Video Monitoring Over the WWW" ("Hui"), from the Multimedia Tools and Applications, 21, 173–195, 2003, Kluwer Academic Publishers, The Netherlands, stated the following: "Recently, the Internet has provided an intermediate

PATENT OWNER
Ex 2004

transmission medium to support remote video monitoring. A number of Internet-based remote monitoring systems such as DigiEye [28], TeleEye Pro [26], Digital Surveillance [13] and Vision-Based Traffic Surveillance System [20] have been developed and marketed. These systems can connect to the Internet through a phone line or Local Area Network (LAN), and provide multiple remote monitoring functions such as live video viewing, digital video recording and motion detection. Compared with traditional monitoring systems, the Internet-based monitoring systems have some obvious advantages." Hui at 1.

During the prosecution of U.S. Patent Application No. 12/268,286, the Office Action Summary for Applications Under Accelerated Examination clarified that "Patel teaches 'the mobile computing device can also be a personal digital assistant (PDA), a digital camera, a pager, a video telephone, a cellular telephone, a hand held computer, a hand held data capture device, etc. Accordingly, each imaging engine is optimized for use in specific applications, such as reading optical codes, video teleconferencing, capturing biometric and other images, taking digital still snapshots, and capturing a sequence of digital images continuously or over a period of time (time lapse). Other applications and features include creating and transmitting video e-mail, performing video surveillance, and previewing and storing images'. And, therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the system of Vanman and Hattori by using the mobile device as a cellular phone for receiving and storing video images. Doing so would help to clear up memory spaces and for securing an important data."

U.S. Pub. No. 2001/0005217 ("Hamilton") discloses a "device for remote information download and transfer for downloading a secure, permanent record of criminal activity and/or accident evidence relating to a vehicle for evidentiary purposes which may be … saved directly onto the downloading device. Hamilton at Abstract. Hamilton "contemplates an off-board downloading device for accessing information on a Recording System and for viewing and/or

PATENT OWNER
Ex 2004

transferring that information to an off site location." Hamilton at [0101]. Hamilton further discloses "the information recorded from certain monitors and transducers located on the Recording System can be downloaded by the interface 18 from hard drive 34 located on the Recording System and superimposed on recorded video information also downloaded from hard drive 34 located on the Recording System." Hamilton at [0030]. "In a preferred aspect, the remote downloading device has at least one transceiver for accessing, downloading, and remotely transmitting information to an off site location, such as a base station, a hospital, an insurance company, law enforcement, a rescue vehicle, or the like." Hamilton at [0015]. "The transceiver receives signals from a remote unit, such as a Recording System, which allows the device to transmit recorded and/or stored information directly from the safe box or hard drive located on the Recording System to an off site location and/or instantaneously as it is generated." *Id*. Hamilton further discloses that the "transceiver 40 can comprise a direct satellite uplink, RF radio, modem, cell phone, or the like." Hamilton at [0026].

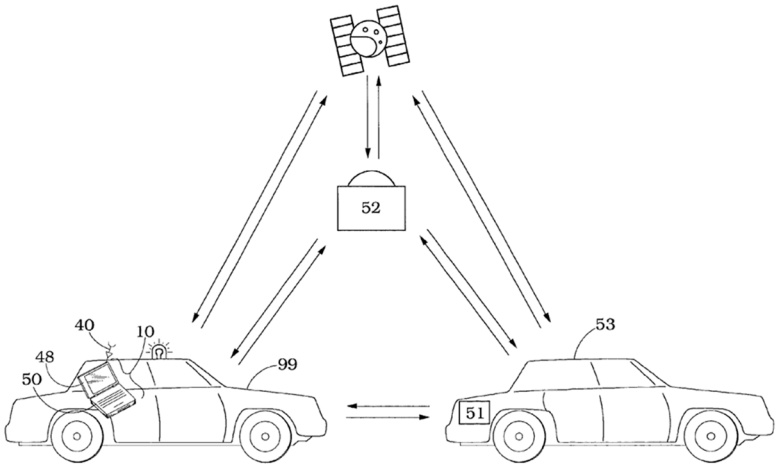


FIG. 2

Hamilton at Fig. 2. In Fig. 2, "the download device 10 is implemented in a form that is similar to that of a laptop computer with a visual display monitor 48 and keyboard 50." Hamilton at [0031]. "The download device 10 may be self-contained with, for example, a phone jack and/or a modem

hooked to a mobile phone or SET for direct satellite transmission via transceiver 40." *Id*. "In the depicted embodiment, the Recording System 51 is located in a vehicle 53, and the download device 10 is located remotely from the Recording Systems 51 such as, for example, in a police cruiser 99." *Id*. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

PCT Pub. No. WO2004/036926 ("Pearlson") discloses "methods and systems for acquiring, storing, and distributing video and telemetry." Pearlson at 1:28-29. "One embodiment is a recording and transmission system comprising: a recorder mountable in a police vehicle configured to record video and meta-data synchronized with the video, wherein the recorded video includes a plurality of segments having fixed lengths, the recorder including a wireless transmitter configured to wirelessly transmit the recorded video segments and meta-data, wherein the meta-data includes: data related to vehicle status; subjective time information; objective time information; serial data." Pearlson at 2:1-6. "One embodiment of the recorder 100 provides event-based recording that enables users to activate a recording session by either pressing a button or activating another device used as an event trigger such as a vehicle light bar, or an alarm contact or other sensor." Pearlson at 10:3-9. "In one example embodiment, a ring buffer in a recorder, such as recorder 100, captures video, audio and data until an instruction or trigger to start the recording process occurs." Pearlson at 8:18-21.

The system includes a mobile video/audio data recorder 100 which records high quality video/audio and serial data telemetry while simultaneously transmitting specially formatted live video/audio and information to personnel using a variety of reception devices or terminals." Pearlson at 7:3-7. For example, access to and display of videos and meta-data can be provided using a standard browser…and a standard media player…executing on a personal or server computer, personal digital assistant, cell phone, and the like, thereby lowering the client cost and

PATENT OWNER
Ex 2004

easing maintenance. Pearlson at 5:14-18. Pearlson further discloses that "the frame rate, bit rate and resolution for transmission can be selected based on the wired or wireless network and the receiving terminal." Pearlson at 7:23-24. "For example, some devices, such as palm-held personal digital assistants (PDAs) and hybrid cell phones may have limited display resolution and processor power." Pearlson at 7:24-26. "In applications where such devices are used to view the video, such as by remote field personnel performing surveillance, the recorder 100 maintains compatibility with the target device by optionally formatting video specifically for the target device." Pearlson at 7:26-29. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

U.S. Pat. No. 6,995,668 ("Junqua") discloses "a wearable, computerized apparatus for use with law enforcement has an evidence collector adapted to collect evidentiary information of a type collected according to law enforcement procedures and useful for identification of a suspect." 1:36-40. "A wireless communications link communicates the evidentiary information and the safety information to a centralized component of a distributed communications system to assist in identifying suspects and dispatching assistance." *Id*. at 1:42-46. "A vehicular component having an on-site camera can receive data from the wearable, computerized component via a wireless connection, automatically activate the camera at times of stress and/or distress, and forward collected information off-site to a centralized, dispatch facility via a wireless connection. *Id*. at 1:52-58. "Also, a two-way, wireless link 32 is capable of transmitting and receiving data in at least one of many possible ways." *Id*. at 2:62-64.

PATENT OWNER
Ex 2004

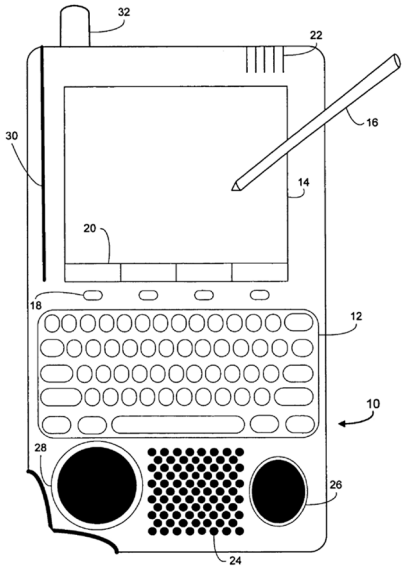


FIG. 1

Id. at Fig. 1. "The distributed communications system of FIG. 2 demonstrates many of the ways apparatus 10 can communicate with other components of the system." *Id*. at 2:64-67.

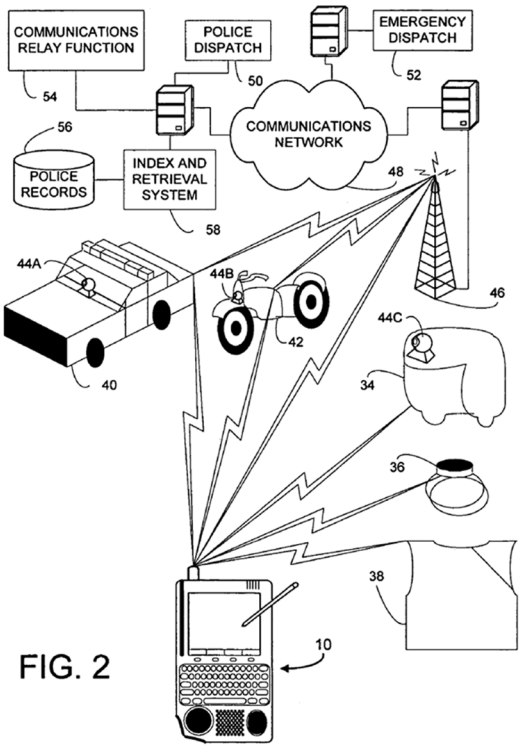


FIG. 2

Junqua at Fig. 2.

> Another way that apparatus 10 can communicate with other components of the system is by using a mid-range wireless link, such as radio wave. This mid-range wireless link can be used to communicate with a vehicular component of the system, such as a police car 40 or motorcycle 42. Thus, suspect biometric data, sensed officer reactions, stimuli, scanned input, text input, voice input and/or sounds and images from various on-site cameras 44A–C can be communicated to and from various on-site components of the distributed communications system.

Junqua at 3:12-21; Fig. 2. "Still another way that apparatus 10 can communicate with other components of the system is by using a long-range communication link, such as shortwave radio and/or cell phone technology, to communicate off-site via a communications tower 46 and adjacent network 48." Junqua at 3:23-26. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

U.S. Pub. No. 2004/0008255 ("Lewellen") "generally relates to video systems, and more particularly relates to video systems for vehicles such as police cars." Lewellen at [0002]. Lewellen discloses that "a vehicle video system includes a small camera in the passenger area." *Id*. at [0010].

> The vehicle video system records video information on a digital video recorder that uses digital media such as a hard disk drive, recordable CD (CD-R), rewritable CD (CR-RW), or writable Digital Video Disc (DVD). The vehicle video system includes a local wireless interface, such as a Bluetooth-compatible interface, that automatically connects to a compatible device in the parking area of the vehicle that is coupled to a database. In this manner, the digital video information collected by the vehicle video system is automatically transferred to the database when the vehicle is parked, removing the need for any human intervention for the logging and cataloging of video tapes. The local wireless interface of the vehicle video system also allows other devices, such as a handheld device or a vehicle video system in a different vehicle, to access the stored digital video information.

Id. "Vehicle video system 300 includes a local wireless interface 390." *Id*. at [0031]. "Local wireless interface 390 provides a significant advantage over the prior art vehicle video systems." *Id*. "Devices enabled with Bluetooth wireless technology will be able to: free electronic accessories and peripherals from wired connections" and "exchange files." *Id*. at [0035]. "Products that incorporate a Bluetooth interface are already on the market." *Id*. at [0040]. "Nokia

PATENT OWNER
Ex 2004

Corp. is selling its Bluetooth 6310 phones in Europe, and are expected to be available in the United States sometime in 2002." *Id*. "Bluetooth wireless technology…provides links between mobile computers, mobile phones, other portable handheld devices, and connectivity to the Internet." *Id*. at 32.

"The benefit of providing the local wireless interface 390 is that digital information recorded by the digital video recorder 370 may be automatically transmitted and received to and from compatible devices." *Id*. at [0043]. "As shown in FIG. 5, one example of a compatible device is a parking area data transfer mechanism 510." *Id*. "A second example of a compatible device is a portable data transfer mechanism 520." *Id*. "A third example of a compatible device is a vehicle video system 300A in a different vehicle." *Id*. For example, "[i]n response to the upload command, the vehicle video system transmits digital data to the parking area data transfer mechanism (step 860)" including "recorded digital video data." *Id*. at [0049]. "[T]he present invention relieves the law enforcement officer from the chore of handling video tapes." *Id*. at [0045].

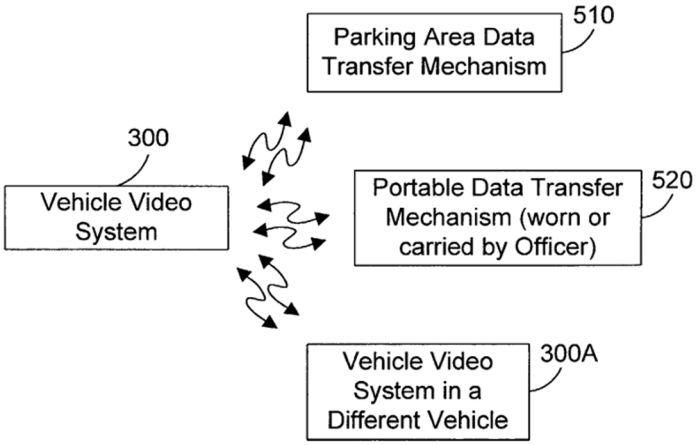


FIG. 5

"Referring back to FIG. 5, a second suitable wireless device that is compatible with the local wireless interface 390 in the vehicle video system 300 is a portable data transfer mechanism 520,

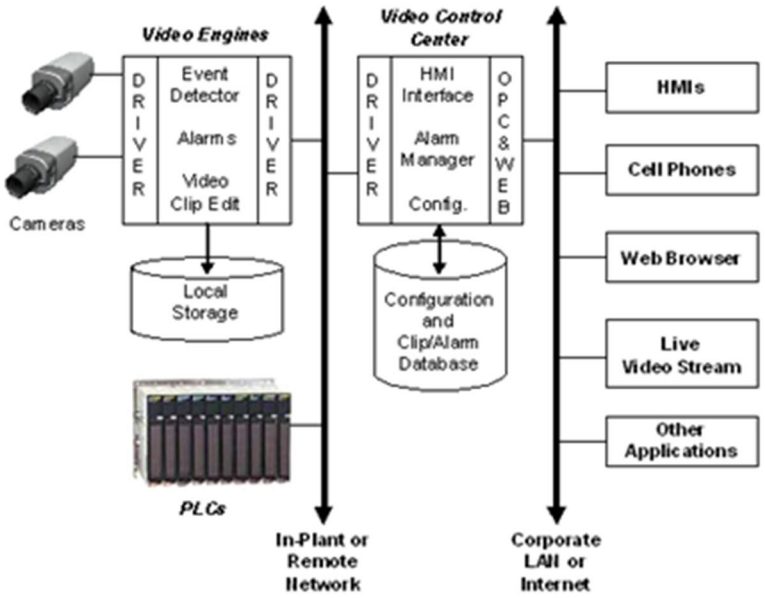
which may be worn or carried by a law enforcement officer." *Id*. at [0046]. "Such a portable data transfer mechanism 520 could act in the same manner as the parking area data transfer mechanism 510, exchanging digital information in both directions as needed." *Id*. "Note, however, that the portable nature of the portable data transfer mechanism 520 allows for easily exchanging digital information with the vehicle video system 300 in the field, without having to return to the parking garage." *Id*.

> During the chase, let's assume that the police car is wrecked. If the only data transfer mechanism were in the parking garage, the car would have to be towed to the parking garage to retrieve the digital information recorded by the digital video recorder 370. However, with a portable data transfer mechanism 520 or using a vehicle video system in a different vehicle 300A, the stored digital information in the wrecked police car can be uploaded to a different device, which can then transfer the data to the central database. We see from this simple example that exchange of digital information in the field is a significant advantage of the preferred embodiments.

Id. at [0047]. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

Video Process Monitoring, Steve Rubin, automation.com, Feb. 3, 2003 describes a video monitoring solution. Video Process Monitoring at 3. "Figure 3: Diagram shows how cameras transmit data over standard industrial networks to a video processor. The video processor stores the data in a relational database and makes images available to an HMI/SCADA system, DCS, PLC, process historians, web browsers, cellphones and PDAs." *Id*. at 10.

PATENT OWNER
Ex 2004



Id.

> Today, there are two primary ways to monitor a process: in person, by walking around the plant, or from a control room via an HMI screen. But there is a third way: Watching the process via camera monitors that put images directly on the HMI screen (Figure 1) or onto a cell phone or PDA. That way, you don't have to wonder what's happening at the process unit. You can see it.

Id. at 2-3. "The video "snapshot" can be stored on disk, along with batch production data, as a visual record." *Id*. at 3.

> A camera image can be used to help diagnose problems in the field. Wouldn't it be nice to be able to actually see what the process is doing without having to walk out to a distillation column in a Texas summer?

Id. "A video system can be configured to watch equipment and take video snapshots when certain conditions occur—such as that intermittent problem." *Id*. at 5.

> With proper configuration, a "before" and "after" clip can be generated to help troubleshoot the cause of the problem. In other words, the camera watches the process continuously, and stores video images internally; when an alarm condition occurs, it can transmit a video snapshot of the unit for, say, five minutes before the alarm occurred, and then continue transmitting real-time images for as long as necessary. All the images can be stored for playback and analyzed as many times as necessary.

Id. "Essentially, the software asks for video images to be transmitted over the factory network only when it needs the data—such as when an alarm occurs or a step occurs in a batch procedure." *Id*. at 7.

> The software converts a computer into a comprehensive digital videorecorder (DVR) that:
>
> - Continuously collects and archives high-resolution video from a multitude of cameras
> - Automatically edits the video stream into before-and-after "clips" when an "event" occurs
> - Sends that video clip, along with an alarm message, to the HMI or SCADA system for further handling by the user
>
> ***
>
> - Communicates efficiently over almost any network provided, from gigabit fiber networks, to mid-speed wireless and wired systems, all the way down to 9600 baud wireless and telephone lines.
>
> Newer industrial video monitoring systems have all these features.

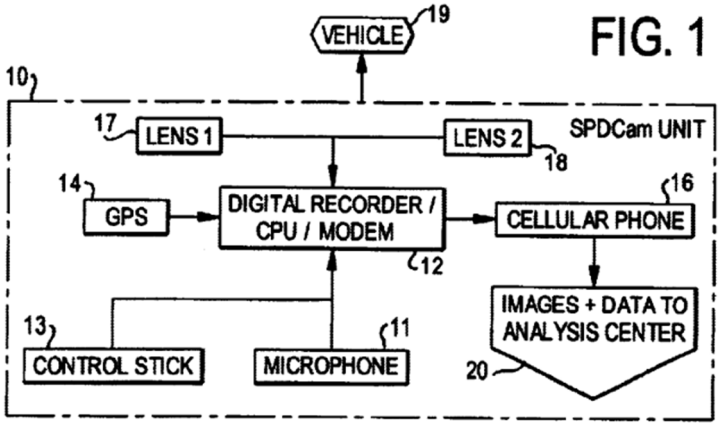
Id. at 7-8. "A key need is to edit the videos down to the clips that are important, and store those compressed clips in a way that makes them easy to retrieve." *Id*. at 8. "A relational database serves this need well, especially in manufacturing and process control applications." *Id*.

Video images can also be transmitted to cell phones or PDAs, so that engineers can diagnose problems from home in the middle of the night. Oran engineer can stand next to the process unit, watch the recorded video snapshot of a problem, and try to figure out what really happened .Because the video data is available as an historical record, images and process data can be sent to an outside expert for an analysis. *Id*. at 9. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

U.S. Pat. No. 6,690,294 ("Zierden") discloses "a method for capturing images of a vehicle and/or vehicle operator suspected of a traffic violation, determining the time and geographic

PATENT OWNER
Ex 2004

location of the suspected violation, transmitting the images and other data to an analysis center, issuing citations to violators and deriving revenue therefrom." Zierden at 1:17-23. "The SPDCam system comprises a color digital imaging device (SPDCam device) connected to a global positioning satellite (GPS) system and a cellular telephone network." *Id*. at 3:31-33. "Referring now to the detail in the drawings, FIG. 1 is a block diagram of a digital imaging device (SPDCam device) 10 for capturing the image of a target vehicle 19 that is suspected of violating a traffic law." *Id*. at 4:11-15.



Id. at Fig. 1. "The SPDCam device 10 comprises two cameras, identified as lenses 17 and 18…." *Id*. at 4: 15-16.

> In operation, the lenses 17 and 18 constantly record images, with the most recent time period, e.g., 120 Seconds, of images being retained in the computer memory at any given time. As new images are acquired, older ones are erased. When a target vehicle is identified, the system operator activates an 'Event' on the SPDCam device 10 to begin collecting data for the target vehicle. When the 'Event' is initiated, the prior 120 seconds of images are permanently stored, and subsequent images of the target vehicle are continuously captured and stored in the computer memory until the operator 'Ends' the event. GPS data and the entirety of the audio recording is retained from the start of the event to the end thereof, and stored with the images.

Id. at 5:8-20. "[S]witches may be provided for selecting between the video mode and the photographic mode of operation." *Id*. at 5:24-25.

"The computer 12 processes, stores, and transmits the images and the geographic and audio data to an analysis center 20 via a cellular telephone 16." *Id*. at 4:24-26. For example, "[a]n 'Event' key permanently stores the most recent 120 seconds of images while continuing to record until an 'End/Store' key is pressed to stop the recording of the images." *Id* at 5:30-33. "All the images are stored in the memory of the computer 12." *Id*. at 5:33-34. "A 'Submit' key activates the cellular telephone 16 connected to the computer 12 which transmits the images and other collected data to the analysis center 20." *Id*. at 5:39-42. Therefore it was known to transmit data from a local memory to a remote memory located on a mobile phone.

Additionally, the charted references and products described in Section III.A.1 also disclose transmitting data from a local memory to a remote memory located on a mobile phone.

d. References Disclosing Treating a Circular buffer as a Single File

As of the earliest priority date for the Group 1 patents, it was known to treat a circular buffer as a single file. For example, utilizing multiple files can be more time consuming than using a single file. Using a single file format has been found to be well-suited for implementing a circular storage buffer and for storing video data. U.S. Pub. No. 2002/0191952 ("Fiore") at [0064]. For example, a single "memory mapped file…has a memory mapped architecture that combines the access speed of the RAM memory with large storage capacity of a disk file." Fiore at [0065]. "The memory mapped architecture allows the playback from the circular storage buffer to be independent from recording into the buffer so that such recording is uninterrupted by the playback." *Id*. "Because the circular storage buffer is implemented via a memory mapped file 110 which is preferably a single contiguous disk file, reads and writes to adjacent virtual memory locations are insured to be physically adjacent on the disk drive. In this manner, the circular storage buffer cannot become fragmented on the disk drive" *Id.* at [0071].

PATENT OWNER
Ex 2004

As the Asserted Patents recognize, it was known to continuously store images in a looping (circular) memory, and upon receiving a trigger signal, protect a portion of the memory. *See e.g.*, '752 patent at 1:35-46. During prosecution of the '034 patent, the application admitted that having "a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory" was known and disclosed by Vanman (WO 6,044,476). '034 File History, Accelerated Examination Support Document at 11-12. Specifically, the applicant stated that "Vanman teaches a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory." *Id*. at 12.

U.S. Pat. Pub. No. 2002/0191952 ("Fiore") "relates to a data recording and playback systems for monitoring processes or occurrences of events which allows the replay and/or analysis of a time sampled signal." Fiore at [0003]. "FIG. 2 shows a schematic illustration of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0043]. "As can be seen, the signal processor 10 is in communication with monitoring device 6 that provides an input signal data to the signal processor 10 such as a video, audio or other type of signal." *Id*. "The network 4 may be any type of a network such as a local area network, wireless network, wide area network, or the Internet." *Id*. at [0039]. "[I]n the networked embodiment of the present invention as shown in FIGS. 1 to 4, the network allows transfer and access of data utilized and stored by the data recording and playback system of the present invention." *Id*. at [0077].

PATENT OWNER
Ex 2004

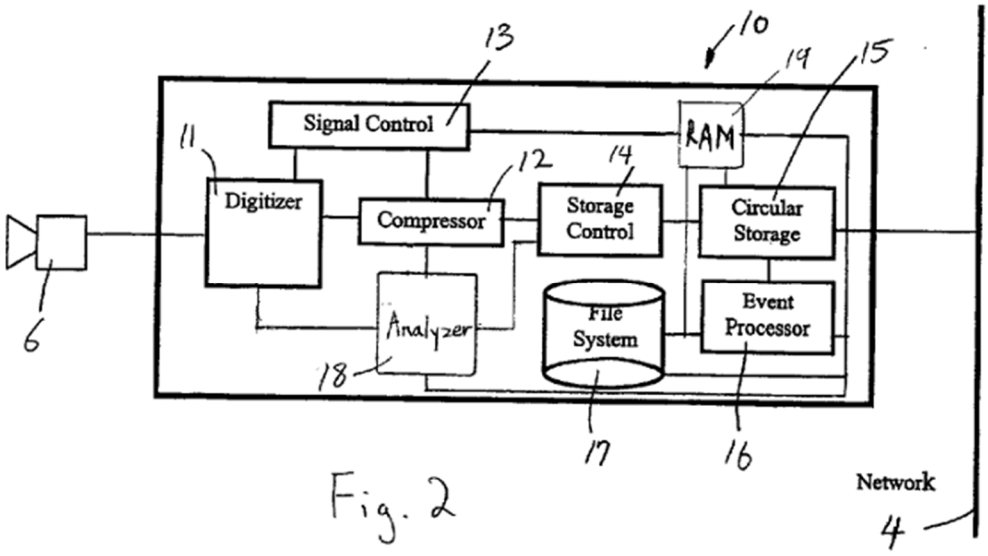


Fig. 2

Id. at Fig. 2. "The signal processor 10 also includes an event processor 16 that is adapted to extract data frames starting from a data frame that is a predetermined number of data frames before the external event time provided by the server 20 as described in further detail below, and ending a predetermined number of data frames after the external event time." *Id*. at [0048]. "[T]he event processor 16 of the present embodiment is also adapted to mark the input signal data being stored in the circular storage buffer 15 when an event occurs to thereby flag the location of an occurrence of an external event in the circular storage buffer 15, signal to mark the input signal data being provided by the event processor 16." *Id*.

"As can also be seen, the slider bar [Fig. 6] is marked by event position indicators 78 and 79." *Id*. at [0059]; Fig. 6.

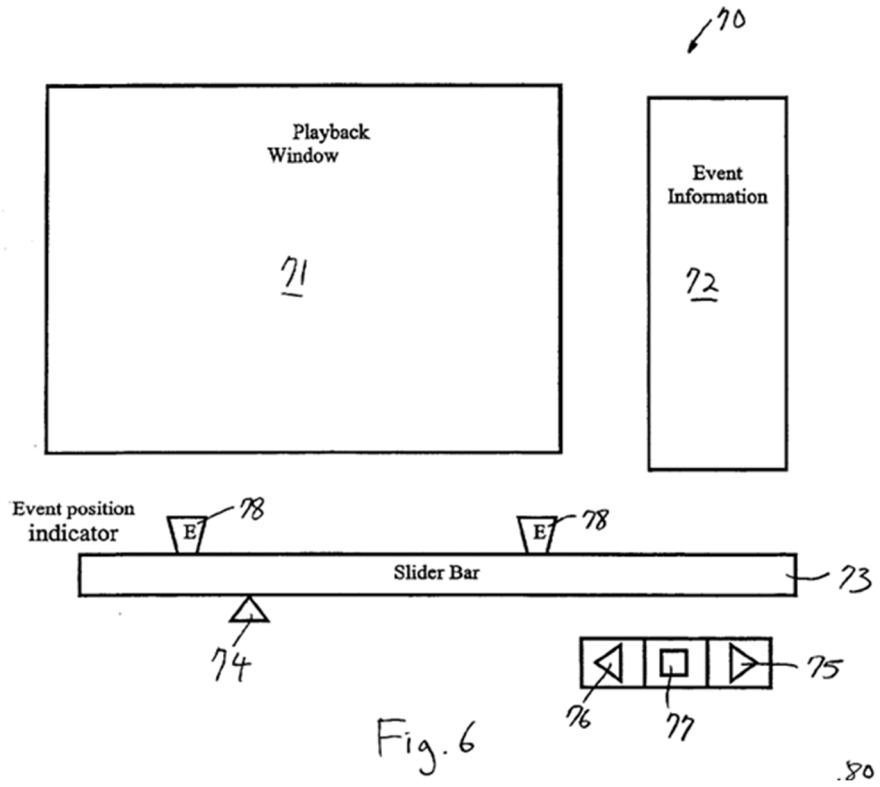


Fig. 6

Id. at Fig. 6. "These event position indicators 78 and 79 mark the position along the slider bar 73 where an event has occurred and is stored in the circular storage buffer 15 of the signal processor 10." *Id*. at [0059]. "The corresponding information may also be displayed in the event information window 72, the displayed event information serving as embedded links to playback the respective data frames associated to the event." *Id*.

"The storage control 14 provided in the signal processor 10 receives the digitized and/or compressed input signal data from the monitoring device 6, and stores the input signal data and the analysis data in the circular storage buffer 15 together with a time stamp for each record." *Id*. at [0047]. "In this regard, the circular storage buffer 15 has two unique positions, the head and tail." *Id*. "The head represents the position in the circular storage buffer 15 having the most recent signal data, and the tail position represents the position in the buffer having the oldest signal data that is leaving the circular storage buffer 15, i.e. being overwritten by the most recent

signal data." *Id*. "The circular storage buffer 15 is preferably implemented as a memory mapped file." *Id*.

"FIG. 9 shows details of a file format in a table 107 suitable for implementing the circular storage buffer 15 of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0064].

107

108	109
File Size	Size of the file in bytes
Maximum Frame Index	Last frame in buffer
Maximum Frame Size	Space allocated for largest frame size
Average Frame Size	Running average of all frames in buffer
Frame Rate	Rate at which the frames are digitized
Head Frame	Position in the file of the head frame
Tail Frame	Position in the file of the tail frame
Format Size	Size of the following format description block
Format 1	Format descriptor of frame data
...	...
Format 128	
Frame 1 Header: Time Stamp	Time of data capture
Frame 1 Header: Page	Virtual memory page boundary
Frame 1 Header: Offset	Offset from frame virtual memory page boundary to data header
Frame 1 Header: Size	Size of the data block
Frame 1: Frame Data	Data block
...	
Frame n Header: Time Stamp	.
Frame n Header: Page	.
Frame n Header: Offset	.
Frame n Header: Size	.
Frame n: Frame Data	.

Fig. 9

Id. at Fig. 9. "[T]he file format shown in table 107 has been found to be well suited for implementing the circular storage buffer 15 and for storing video data that are made of sequence

PATENT OWNER
Ex 2004

of frames, each representing an individual image." *Id*. at [0064]. "In addition, the size of the circular storage buffer is fixed and has a fixed size file header that points to the beginning (head) and end (tail) of the circular storage buffer data." *Id*. "Initially, it should be noted that the circular storage buffer may be implemented as a reserved area in memory, a disk file, or as a storage in a looped media." *Id*. at [0065]. "The memory mapped file 110 has a memory mapped architecture that combines the access speed of the RAM memory with large storage capacity of a disk file." *Id*. "The memory mapped architecture allows the playback from the circular storage buffer to be independent from recording into the buffer so that such recording is uninterrupted by the playback." *Id*. "In particular, the memory mapped file 110 of the circular storage buffer 15 is mapped in the sense that multiple sections of the file 120 stored on disk drives 102 and/or 103 are mapped to specific ranges of addresses within the RAM 19 of the signal processor 10." *Id*. at [0066]. "Such a configuration maximizes access and utilization of the circular storage buffer 15 while minimizing disk latency and performance penalties." *Id*. "Because the circular storage buffer is implemented via a memory mapped file 110 which is preferably a single contiguous disk file, reads and writes to adjacent virtual memory locations are insured to be physically adjacent on the disk drive." *Id*. at [0071]. "In this manner, the circular storage buffer cannot become fragmented on the disk drive." *Id*. Therefore, it was known to treat a circular buffer as a single file.

U.S. Pat. No. 6,578,070 ("Weaver") discloses "[a] method and system for storing a continuous feed of video." Weaver at Abstract. "According to one aspect of the invention, the continuous feed is encoded in a digital video format to produce a digital data stream." *Id*. "A series of content files is created by repeatedly performing the steps of (1) storing the digital data stream in a current file, and (2) establishing a new file as the current file when the current file satisfies a predetermined condition." *Id*. "If the series of content files satisfy a particular deletion criteria, then a particular content file that satisfies a particular deletion criteria is deleted." *Id*. "In certain

PATENT OWNER
Ex 2004

aspects, tag information that indicates information about frames contained in the digital data stream is generated." *Id*. "The tag information is used to identify a location in the digital data stream that corresponds to the relative time." *Id*. "The digital data stream is then transmitted to the client beginning at the location in the digital data stream that corresponds to the relative time." *Id*.

> In order to have continuous buffer of data, for instance the last 24 hours of Lifetime, Television for Women, older content needs to be deleted along with the corresponding tags. Various approaches may be used to implement such a continuous buffer. With respect to the content data, the simplest approach to implement a continuous buffer is to create a single file large enough to hold 24 hours of footage. The file is then treated as a circular buffer. Specifically, after the creation of the initial 24 hour file, the MDS server 110 would establish the beginning of the file as the current "insertion point". The MDS server 110 would then store new content data over the old data at the insertion point, and move the insertion point to the end of the new data. When the insertion point hits the end of the file, it wraps around again to the beginning of the file.

Id. at 17:9-25.

> FIG. 4 illustrates an alternative, more flexible approach to buffering a predetermined amount of an infinite video feed. Referring to FIG. 4, the content data is stored in a group of smaller files 402-414. Each of the smaller files stores a subset of the buffered content data. In the illustrated embodiment, each of files 402-412 store two hours worth of content. File 414 currently stores one hour of content. The current insertion point is at the end of file 414. When file 414 reaches two hours of content, file 414 will be closed and a new content file will be created. As content files age, the older content files are deleted to free up disk space for new files. During playback, files are joined together seamlessly by the video pump as the content data is sent to the client.

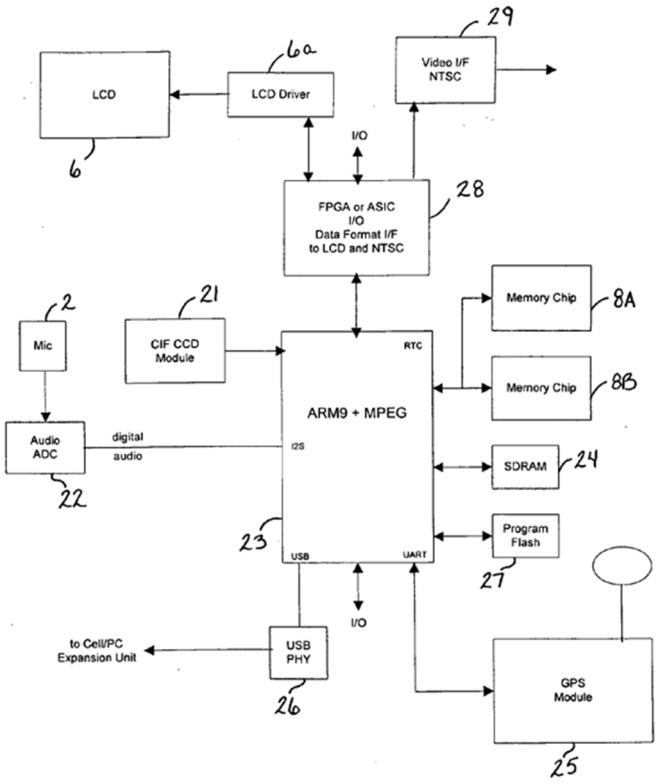
Id. at 17:37-49. Therefore, it was known to treat a circular buffer as a single file.

U.S. Pub. No. 2005/0078195 ("Van Wagner") states "[t]he present invention provides an improved method and system for a personal mobile digital recording system (MDRS) to capture activities of, for example, a law enforcement officer." Van Wagner at [0005]. Specifically, "a mobile recording device including: a flexible camera head for capturing video stream data in real time, a microphone for capturing audio data in real time, a circular buffer for continuously storing

PATENT OWNER
Ex 2004

the video stream data and the audio data; and a wireless transceiver for transmitting the video and audio data in real time to a remote location." Van Wagner at [0009]; Figs. 2, 4B.

FIG. 2



Van Wagner at Fig. 2. "In one embodiment, the single replaceable memory module includes a single image file configured as a circular buffer." *Id*. at [0084]. "The single replaceable memory module is then operated as a circular buffer, in which the video, audio, and other data is being continuously recorded in the single replaceable memory module in a circular manner." *Id*. "In one embodiment, video, audio, date and time, GPS overlay channel, electronic compass bearing channel, and biometric data overlay channel are encoded in an MPEG data stream." *Id*. at [0035]. "The MPEG data stream is written and saved on replaceable memory modules." *Id*. "In one embodiment, the image files created on the SD memory card are named according to the following format: YYMMDDHHMI.mp4 (YY=Year, MM=Month, DD=Day, HH=Hour, MI=Minute)." *Id*. at [0084]. Therefore, it was known to treat a circular buffer as a single file.

U.S. Patent No. 7,158,167 ("Yerazunis") describes "A compact video image recording device which is mountable to a gun and useful for recording video images before and after the firing of the gun." Yerazunis at Abstract; *see also, generally* U.S. 2002/005895 ("Freeman 1") (continuation of Appl. No. 08/906,493, for which Yerazunis is a continuation-in-part); U.S. 7,088,387 ("Freeman 2") (issued from Appl. No. 08/906,493). "A block diagram of the video recording device in accordance with the present invention is depicted in FIG. 3." *Id*. at 5:40-41; Freeman 1 at [0029]; Freeman 2 at 4:38-39.

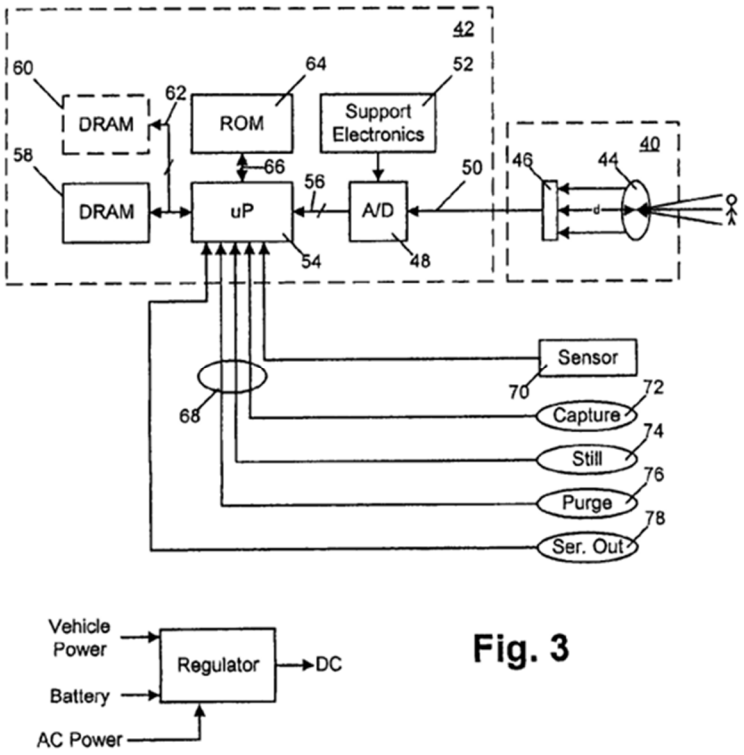


Fig. 3

Id. at Fig. 3. "As illustrated in FIG. 3, the recording device includes a camera 40 and video electronics 42." *Id*. at 5:41-43; Freeman 1 at [0029]; Freeman 2 at 4:39-41. "The central control processor 54 is coupled to a semiconductor memory 58 which comprises a DRAM a in preferred embodiment." *Id*. at 6:24-26; Freeman 1 at [0033]; Freeman 2 at 5:22-24. "The central control processor 54 may be provided with a number of inputs 68 which permit activation of the video recording device and control of the device by a user." *Id*. at 6:40-42; Freeman 1 at [0034]; Freeman

2 at 5:38-40. "Exemplary inputs comprise, an event sensor 70, a "capture' button 72, a "still" button 74 and a "purge" button 76." *Id*. at 6:43-44; Freeman 1 at [0034]; Freeman 2 at 5:41-42.

"Following the compression of the frame data, the central control processor stores the compressed data within the semiconductor memory 58." *Id*. 7:7-9; Freeman 1 at [0037]; Freeman 2 at 6:5-7. "The semiconductor memory 58 is structured as a circular memory buffer as illustrated in FIG. 4a." *Id*. at 7:9-11; Freeman 1 at [0037]; Freeman 2 at 6:7-9.

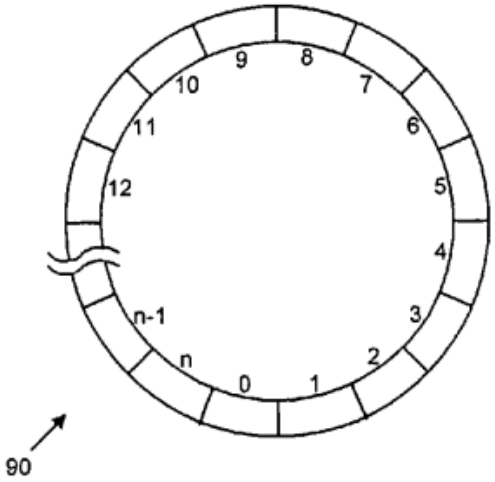


Fig. 4a

Id. at Fig. 4a.

> Thus, following compression, each compressed video frame is stored in the next successive frame buffer location and any frame data continued in such location is overwritten. For example, referring to FIG. 4 a, if the last frame were stored at location 3 of the circular buffer 90, the subsequent video frame would be stored at location 4 of the circular frame buffer. The video recording device, absent receipt of some trigger event from the sensor 54 or activation of other input by the user, continues to store captured frame data in successive locations of the circular buffer, overwriting previously received frame data stored in respective buffer locations with the most recently received frame data.

Id. at 7:11-22; Freeman 1 at [0037]; Freeman 2 at 6:9-20. "The operation of the circular buffer is described with more particularity below and with respect to FIG. 4b." *Id.* at 7:23-24; Freeman 1 at [0038]; Freeman 2 at 6:21-22.

PATENT OWNER
Ex 2004

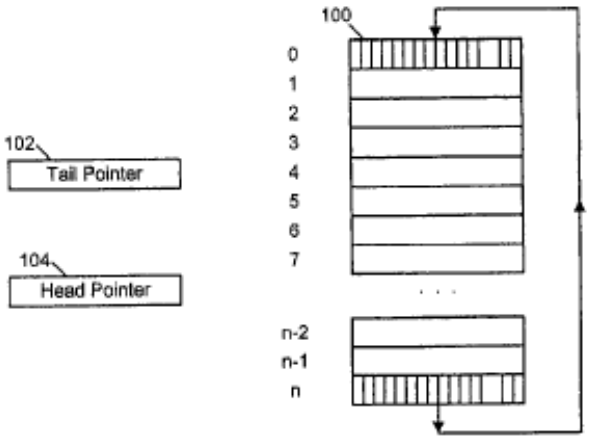


Fig. 4b

Id. at Fig. 4b.

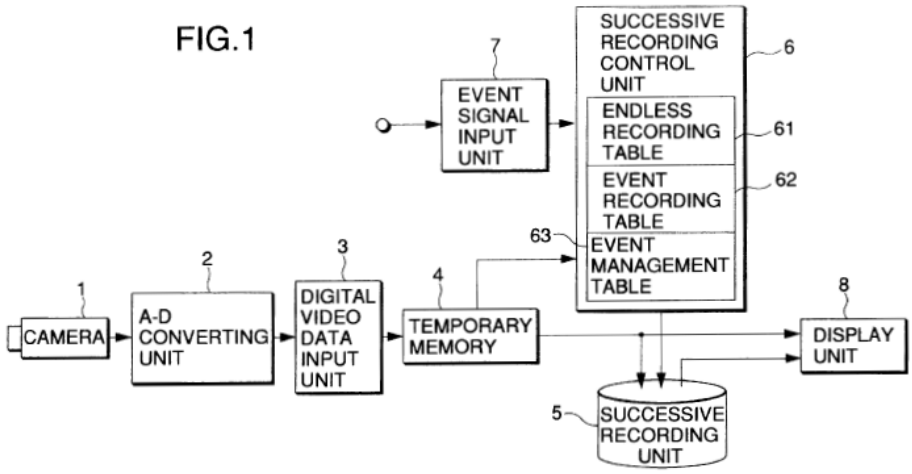
> Associated with the semiconductor memory buffer 58 (and additional buffer memory 60 if such is employed) are a tail pointer 102 and a head pointer 104. The head pointer points to the address of the frame buffer location for storage of the next frame data. Such address is offset in the respective frame to address the respective byte for the frame data being stored. For simplicity, the operation of the buffer is explained with respect to the frame addresses recognizing that plural locations are utilized within the buffer to store the data associated with any given frame.
>
> The head pointer 104 points to the location for storage of the incoming frame data. Thus, if the next frame data is to be stored in location 4, the head pointer is set to location 4. Once all of the data corresponding to frame 4 has been stored in the buffer, in normal operation and in the absence of a trigger event, the head pointer is incremented to point to frame number 5. As an example, assume a semiconductor memory buffer 58 is employed in which n=127; i.e. the frame buffer is capable of storing 128 frames of data. It is further assumed for purposes of the present example that it is desired to have half of the captured frames precede the trigger event and half of the frames follow the trigger event. The head pointer 104 is incremented following the storing of each respective frame. In normal operation, the tail pointer is incremented each time the head pointer is incremented, however, the tail pointer comprises an address which lags the head pointer by sixty four. In the circular buffer frame address 0 follows frame address n (i.e. 127 in the present example).

Id. at 7:33-61; Freeman 1 at [0039] – [0040]; Freeman 2 at 6:31-59. "In another embodiment of the video recording device, the captured frame is stored within a frame location within the circular

buffer, however, the frame is protected from overwriting while video capture within the circular buffer continues." *Id*. at 9:34-38; Freeman 1 at [0047]; Freeman 2 at 8:32-36. "Such may be accomplished via tagging protected frame locations containing captured still frames and checking to determine whether a frame location is protected prior to writing to the frame location." *Id*. at 9:39-42; Freeman 1 at [0047]; Freeman 2 at 8:37-40. "It is noted that while storage of video frame data terminates in the case of a single trigger event such as in the situation in which the recording device is employed to preserve a record of a car crash, in the present application, recording of data continues since a subsequent firing event may occur." *Id*. at 17:45-50. "To accommodate this objective, after the conclusion of data storage associated with one firing event, the head pointer 104 and the tail pointer 102 (or pointers in the event multiple buffer groups are employed as discussed above) defining the area(s) of the circular buffer memory, are stored in a table to allow later retrieval of the video data pertaining to each firing of the gun." *Id* at 17:50-56. Therefore, it was known to treat a circular buffer as a single file.

U.S. Patent No. 6,167,186 ("Kawasaki") discloses "a video recording device for recording a digitized video image inputted from a camera into a digital storage memory, and more particularly to a video recording device which is capable of retroactively reproducing a video image (event video image) generated when any event occurs while it records a video image monitored in real time." Kawasaki at 1:8-14.

PATENT OWNER
Ex 2004

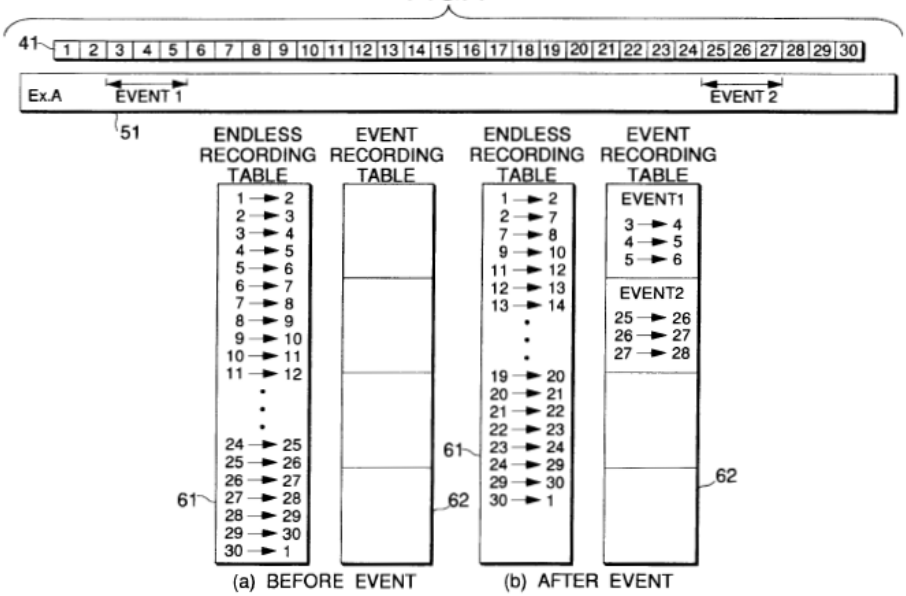


Id. at Fig. 1.

> Now referring to FIG. 4. an explanation will be given of a method of the processes of recording and reproducing in the successive recording control unit 6. Reference numeral 41 shows the state where the successive recording unit 5 is divided into a plurality of blocks (30 blocks in this example) labeled block numbers (pointers), respectively. Reference numeral 51 denotes a time zone of events which have occurred during the successive recording. The successive recording control unit 6 includes an endless recording table 61 and an event recording table 62, and manages the numbers of the blocks on which the digital video image is to be recorded as shown in part (a) of FIG. 4. The notation "1-2" in the part (a) represents that the recording block successive to block No. 1 is block No. 2. By provision of such a recording table, the blocks are overwritten in order from the block with an older record.

Id. at 4:30-45.

FIG.4



Id. at Fig. 4. "Next, an explanation will be given of the operation when the successive recording control unit 6 receives an event signal from the event signal inputting unit 7." *Id*. at 4:39-48. "Now it is assumed that the event signal is inputted while the recording is made at the position of block No. 4." *Id*. at 4:48- 50. "In this case, the video image from block No. 3 with a previously recorded image to block No. 6 with a video image after the event will be managed as an event video image." *Id*. at 4:50-53.

> Since the present invention always executes the recording in a manner of endless recording, the video image inclusive of the video image prior to inputting of the event signal can be managed as an event video image. Thus, event No. 1 will be managed on the event recording table as shown in part (b) of FIG. 4. Event No. 2 will be managed similarly. Now if only the event recording table is updated as it is, the event video images are overwritten to disappear at a period of endless recording. For this reason, the endless recording table must be also modified. As shown in the part (b), notation "2-7" represents that the block Nos. 3, 4, 5 and 6 are excluded from the loop of the endless recording. Likewise, notation "24-29" saves the event video image of event No. 2 from the endless recording. In this way, in the endless recording area, the recording area correlated with the event signal will not be thereafter used as an endless recording and not overwritten so that the event video image will be held for a longer period than the endless recording period.

Id. at 4:53-5:4. "Since the event video image when an event occurs needs not to be transferred to a separate area, the access time in the successive recording unit can be efficiently used so that the

event video image can be reproduced with a sufficient allowance." *Id*. at 7:4-9. Therefore, it was known to treat a circular buffer as a single file.

Additionally, the charted references and products described in Section III.A.1 also disclose treating a circular buffer as a single file.

e. References Disclosing Indexing Write-Protected Portions as a Second Distinct File in the Circular Buffer

As of the earliest priority date for the Group 1 patents, it was known to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer. For example, Indexing write-protected portions as distinct files within the circular buffer improves access time to the recorded events. Specifically, "since the event video image when an event occurs needs not to be transferred to a separate area, the access time in the successive recording unit can be efficiently used so that the event video image can be reproduced with a sufficient allowance." Kawasaki at 7:4-9. Similarly, "it is often desirable for the user of the event recording and playback device to quickly view or otherwise access the stored data for a segment of time monitored, and to quickly move on to another segment of time monitored." Fiore at [0010]. "Having to retrieve one or more of the plurality of files that are stored in the intermediate storage location, and/or to compile a plurality of files is cumbersome and time consuming." *Id*. "More specifically, as the operator retrieves and/or compiles the files stored in the intermediate storage location, the resources of the processor and the bus of the computer become occupied and likelihood of delays in executing instructions to record and store the data into the intermediate storage location increases thereby resulting in the increased likelihood of dropped frames." *Id*. at [0014]. Using a circular buffer and marking event data as a second file within the circular buffer provides a solution to the above identified problem. Fiore at [0022], [0065] – [0068].

PATENT OWNER
Ex 2004

U.S. Pat. Pub. No. 2002/0191952 ("Fiore") "relates to a data recording and playback systems for monitoring processes or occurrences of events which allows the replay and/or analysis of a time sampled signal." Fiore at [0003]. "FIG. 2 shows a schematic illustration of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0043]. "As can be seen, the signal processor 10 is in communication with monitoring device 6 that provides an input signal data to the signal processor 10 such as a video, audio or other type of signal." *Id*. "The network 4 may be any type of a network such as a local area network, wireless network, wide area network, or the Internet." *Id*. at [0039]. "[I]n the networked embodiment of the present invention as shown in FIGS. 1 to 4, the network allows transfer and access of data utilized and stored by the data recording and playback system of the present invention." *Id*. at [0077].

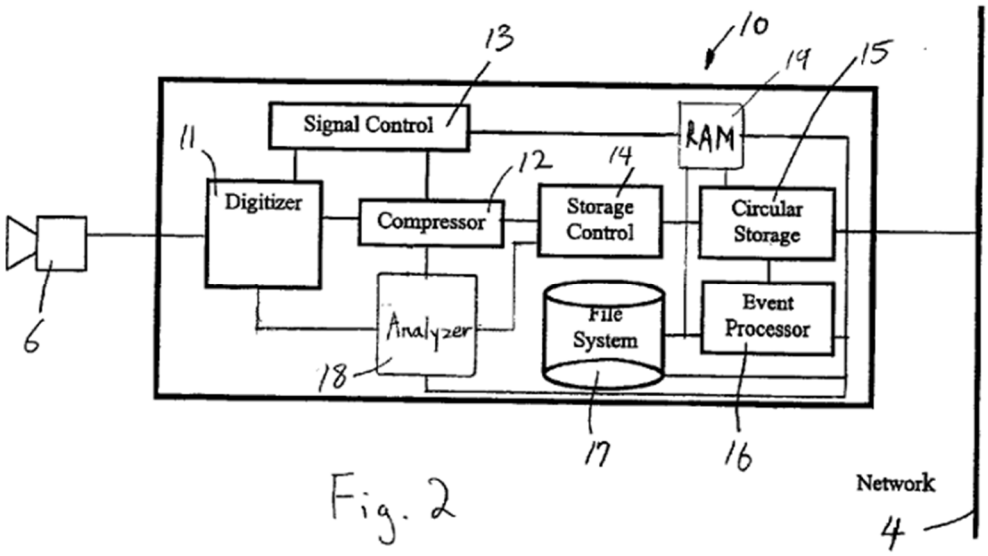


Fig. 2

Id. at Fig. 2. "The storage control 14 provided in the signal processor 10 receives the digitized and/or compressed input signal data from the monitoring device 6, and stores the input signal data and the analysis data in the circular storage buffer 15 together with a time stamp for each record." *Id*. at [0047]. "The signal processor 10 also includes an event processor 16 that is adapted to extract data frames starting from a data frame that is a predetermined number of data frames before

the external event time provided by the server 20 as described in further detail below, and ending a predetermined number of data frames after the external event time." *Id*. at [0048]. "The extracted data frames are then stored in file system 17 thereby providing a permanent record of the data frames before, during, and after the event prior to the data frames being overwritten in the circular storage buffer 15 by more recent data frames." *Id*. "[T]he event processor 16 of the present embodiment is also adapted to mark the input signal data being stored in the circular storage buffer 15 when an event occurs to thereby flag the location of an occurrence of an external event in the circular storage buffer 15, signal to mark the input signal data being provided by the event processor 16." *Id*. "Further in this regard, the event Signals may be initiated manually by the user of the data recording and playback System 10 as well using an input device Such as a keyboard, mouse, etc. So that a particular data frame in the circular Storage device may be manually marked." *Id*. at [0049].

"The client circular storage control 32 receives the playback commands provided by the user playback control 31, and receives the signal data from the circular storage buffer 15 of the signal processor 10 or from previously saved event files stored in the file system 17." *Id*. at [0053]. "FIG. 6 shows one embodiment of a user playback control screen 70 which may be provided to or by the client computers 30 and 30' of FIG. 1 that allows a user to control and interface with the data recording and playback system 2." *Id*. at [0057]. "The playback control screen 70 is provided with a video playback window 71 for graphically displaying the retrieved data frames from the circular buffer 15 or the file system 17 of the signal processor 10." *Id*. "As can also be seen, the slider bar [Fig. 6] is marked by event position indicators 78 and 79." *Id*. at [0059]; Fig. 6.

PATENT OWNER
Ex 2004

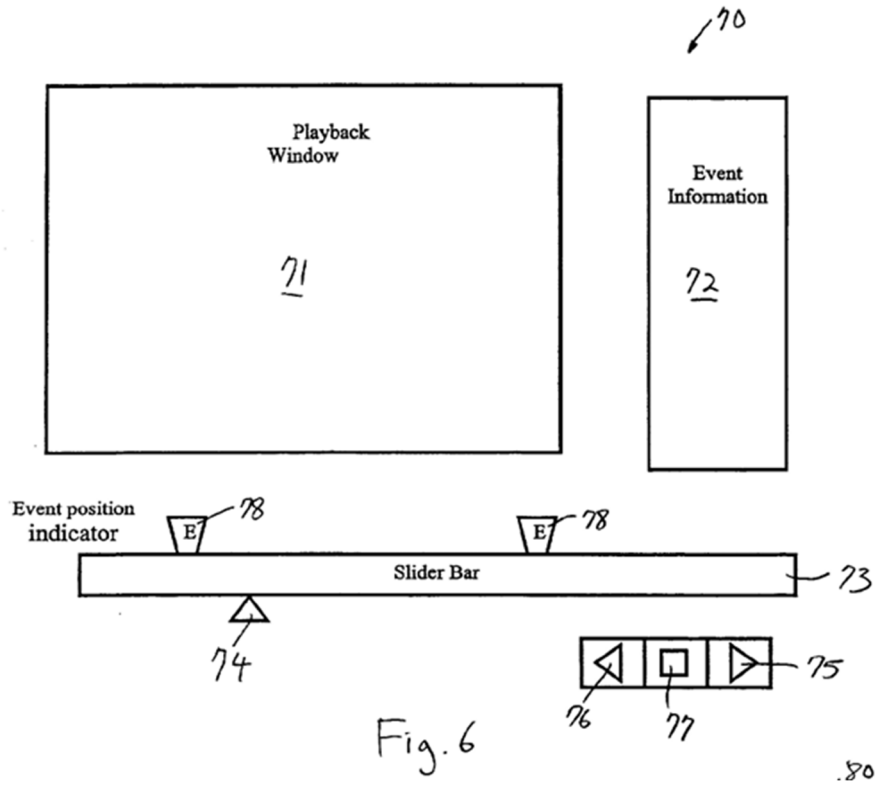


Fig. 6

Id. at Fig. 6. "These event position indicators 78 and 79 mark the position along the slider bar 73 where an event has occurred and is stored in the circular storage buffer 15 of the signal processor 10." *Id*. at [0059]. "The corresponding information may also be displayed in the event information window 72, the displayed event information serving as embedded links to playback the respective data frames associated to the event." *Id*.

"The storage control 14 provided in the signal processor 10 receives the digitized and/or compressed input signal data from the monitoring device 6, and stores the input signal data and the analysis data in the circular storage buffer 15 together with a time stamp for each record." *Id*. at [0047]. "In this regard, the circular storage buffer 15 has two unique positions, the head and tail." *Id*. "The head represents the position in the circular storage buffer 15 having the most recent signal data, and the tail position represents the position in the buffer having the oldest signal data that is leaving the circular storage buffer 15, i.e. being overwritten by the most recent

signal data." *Id*. "The circular storage buffer 15 is preferably implemented as a memory mapped file." *Id*.

"FIG. 9 shows details of a file format in a table 107 suitable for implementing the circular storage buffer 15 of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0064].

107

108	109
File Size	Size of the file in bytes
Maximum Frame Index	Last frame in buffer
Maximum Frame Size	Space allocated for largest frame size
Average Frame Size	Running average of all frames in buffer
Frame Rate	Rate at which the frames are digitized
Head Frame	Position in the file of the head frame
Tail Frame	Position in the file of the tail frame
Format Size	Size of the following format description block
Format 1	Format descriptor of frame data
...	...
Format 128	
Frame 1 Header: Time Stamp	Time of data capture
Frame 1 Header: Page	Virtual memory page boundary
Frame 1 Header: Offset	Offset from frame virtual memory page boundary to data header
Frame 1 Header: Size	Size of the data block
Frame 1: Frame Data	Data block
...	
Frame n Header: Time Stamp	.
Frame n Header: Page	.
Frame n Header: Offset	.
Frame n Header: Size	.
Frame n: Frame Data	.

Fig. 9

Id. at Fig. 9. "[T]he file format shown in table 107 has been found to be well suited for implementing the circular storage buffer 15 and for storing video data that are made of sequence

PATENT OWNER
Ex 2004

of frames, each representing an individual image." *Id*. at [0064]. "In addition, the size of the circular storage buffer is fixed and has a fixed size file header that points to the beginning (head) and end (tail) of the circular storage buffer data." *Id*. "Initially, it should be noted that the circular storage buffer may be implemented as a reserved area in memory, a disk file, or as a storage in a looped media." *Id*. at [0065]. "The memory mapped file 110 has a memory mapped architecture that combines the access speed of the RAM memory with large storage capacity of a disk file." *Id*. "The memory mapped architecture allows the playback from the circular storage buffer to be independent from recording into the buffer so that such recording is uninterrupted by the playback." *Id*. "In particular, the memory mapped file 110 of the circular storage buffer 15 is mapped in the sense that multiple sections of the file 120 stored on disk drives 102 and/or 103 are mapped to specific ranges of addresses within the RAM 19 of the signal processor 10." *Id*. at [0066]. "Such a configuration maximizes access and utilization of the circular storage buffer 15 while minimizing disk latency and performance penalties." *Id*. "Because the circular storage buffer is implemented via a memory mapped file 110 which is preferably a single contiguous disk file, reads and writes to adjacent virtual memory locations are insured to be physically adjacent on the disk drive." *Id*. at [0071]. "In this manner, the circular storage buffer cannot become fragmented on the disk drive." *Id*.

"FIG. 7 shows an example playback control screen which has been implemented as a computer window screen 80." *Id*. at [006].

PATENT OWNER
Ex 2004

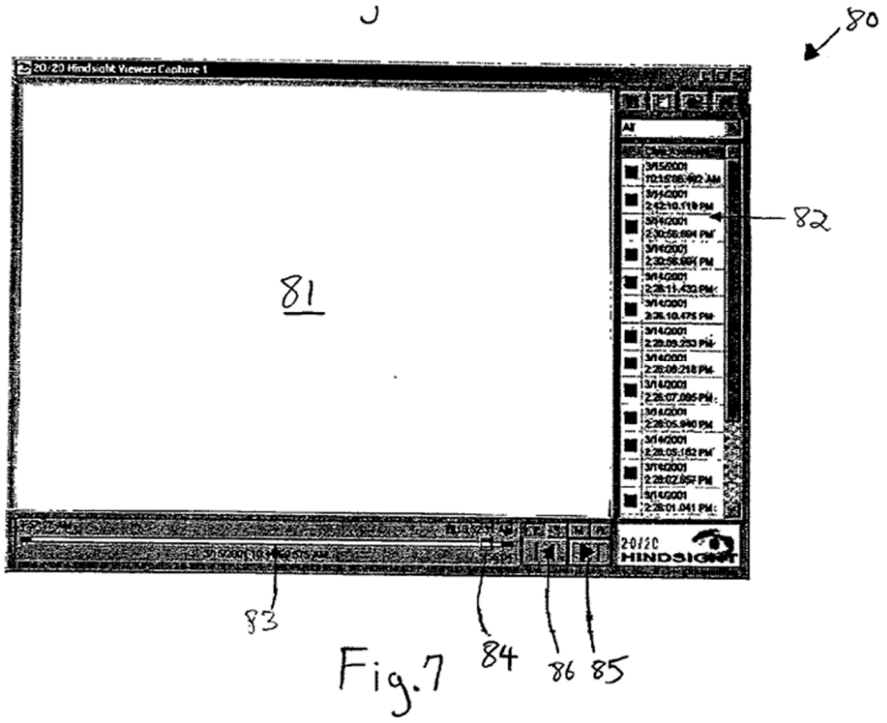


Fig. 7

Id. at Fig. 7. "As can be seen, the window screen 80 is provided with a playback window 81 that displays the reconstructed data frames, and an event information window 82 which lists the events that may be viewed the user, the listed events serving as embedded links to playback the respective data frames associated to the event." *Id*.

"One embodiment of the data recording and play back system also includes an event controller that provides an event signal associated to time of an event. An event database is provided for storing event signal data, and an event processor is provided that copies a plurality of data frames stored in the circular storage buffer that have time stamps proximate to the time of the event into additional secondary memory mapped files, each containing a single event, indexed from the event database. An access controller may be provided which is adapted to retrieve the plurality of data frames that have time stamps proximate to the time of the event from the event database, the event database being provided in at least one hard disk drive of a computer in one embodiment. The access controller may be connected to a network to allow remote access thereof.

In such an embodiment, the system may be provided with at least one client device connected to the network, the client device such as a computer being adapted to remotely control the access controller. In this regard, the client device may include a display device for displaying the plurality of data frames copied from the circular storage buffer." *Id.* at [0022]. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Pat. No. 6,578,070 ("Weaver") discloses "[a] method and system for storing a continuous feed of video." Weaver at Abstract. "According to one aspect of the invention, the continuous feed is encoded in a digital video format to produce a digital data stream." *Id*. "A series of content files is created by repeatedly performing the steps of (1) storing the digital data stream in a current file, and (2) establishing a new file as the current file when the current file satisfies a predetermined condition." *Id*. "If the series of content files satisfy a particular deletion criteria, then a particular content file that satisfies a particular deletion criteria is deleted." *Id*. "In certain aspects, tag information that indicates information about frames contained in the digital data stream is generated." *Id*. "The tag information is used to identify a location in the digital data stream that corresponds to the relative time." *Id*. "The digital data stream is then transmitted to the client beginning at the location in the digital data stream that corresponds to the relative time." *Id*.

> In order to have continuous buffer of data, for instance the last 24 hours of Lifetime, Television for Women, older content needs to be deleted along with the corresponding tags. Various approaches may be used to implement such a continuous buffer. With respect to the content data, the simplest approach to implement a continuous buffer is to create a single file large enough to hold 24 hours of footage. The file is then treated as a circular buffer. Specifically, after the creation of the initial 24 hour file, the MDS server 110 would establish the beginning of the file as the current "insertion point". The MDS server 110 would then store new content data over the old data at the insertion point, and move the insertion point to the end of the new data. When the insertion point hits the end of the file, it wraps around again to the beginning of the file.

Id. at 17:9-25.

PATENT OWNER
Ex 2004

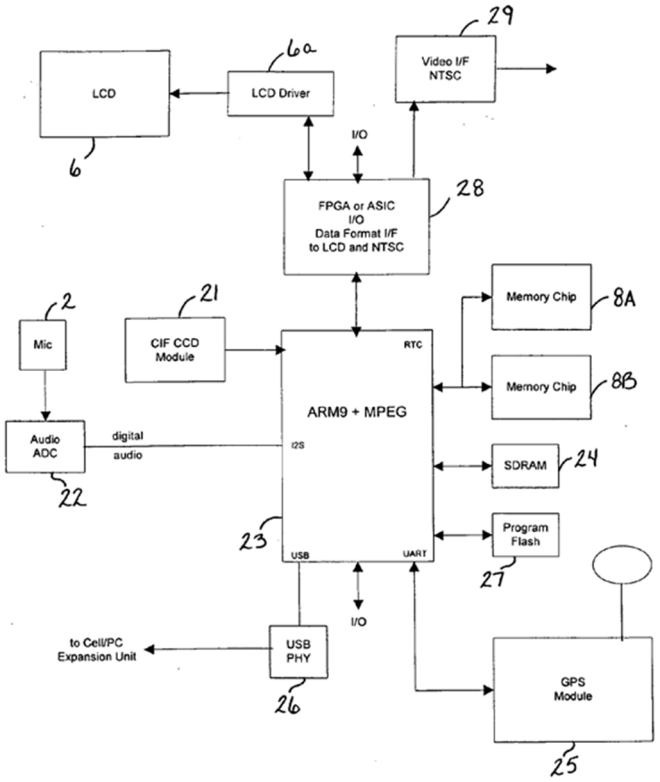
> FIG. 4 illustrates an alternative, more flexible approach to buffering a predetermined amount of an infinite video feed. Referring to FIG. 4, the content data is stored in a group of smaller files 402-414. Each of the smaller files stores a subset of the buffered content data. In the illustrated embodiment, each of files 402-412 store two hours worth of content. File 414 currently stores one hour of content. The current insertion point is at the end of file 414. When file 414 reaches two hours of content, file 414 will be closed and a new content file will be created. As content files age, the older content files are deleted to free up disk space for new files. During playback, files are joined together seamlessly by the video pump as the content data is sent to the client.

Id. at 17:37-49. "According to another feature of the invention, a series of content files is created by repeatedly performing the steps of (1) storing the digital data stream in a current file; (2) generating and storing tag information separate from the digital video stream that indicates information about frames contained in the digital data stream; and (3) establishing a new file as the current file when the current file satisfies a predetermined condition. If the series of content files satisfy a particular deletion condition, then a particular content file that satisfies a particular deletion criteria is deleted. *Id*. at 3:40-50. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Pub. No. 2005/0078195 ("Van Wagner") states "[t]he present invention provides an improved method and system for a personal mobile digital recording system (MDRS) to capture activities of, for example, a law enforcement officer." Van Wagner at [0005]. Specifically, "a mobile recording device including: a flexible camera head for capturing video stream data in real time, a microphone for capturing audio data in real time, a circular buffer for continuously storing the video stream data and the audio data; and a wireless transceiver for transmitting the video and audio data in real time to a remote location." Van Wagner at [0009]; Figs. 2, 4B.

PATENT OWNER
Ex 2004

FIG. 2



Van Wagner at Fig. 2. "In one embodiment, the single replaceable memory module includes a single image file configured as a circular buffer." *Id*. at [0084]. "The single replaceable memory module is then operated as a circular buffer, in which the video, audio, and other data is being continuously recorded in the single replaceable memory module in a circular manner." *Id*. "In one embodiment, video, audio, date and time, GPS overlay channel, electronic compass bearing channel, and biometric data overlay channel are encoded in an MPEG data stream." *Id*. at [0035]. "The MPEG data stream is written and saved on replaceable memory modules." *Id*. "In one embodiment, the image files created on the SD memory card are named according to the following format: YYMMDDHHMI.mp4 (YY=Year, MM=Month, DD=Day, HH=Hour, MI=Minute)." *Id*. at [0084]. Therefore, it was known to treat a circular buffer as a single file and to save data as a second, distinct file in the circular buffer.

U.S. Patent No. 7,158,167 ("Yerazunis") describes "A compact video image recording device which is mountable to a gun and useful for recording video images before and after the firing of the gun." Yerazunis at Abstract. "A block diagram of the video recording device in accordance with the present invention is depicted in FIG. 3." *Id*. at 5:40-41.

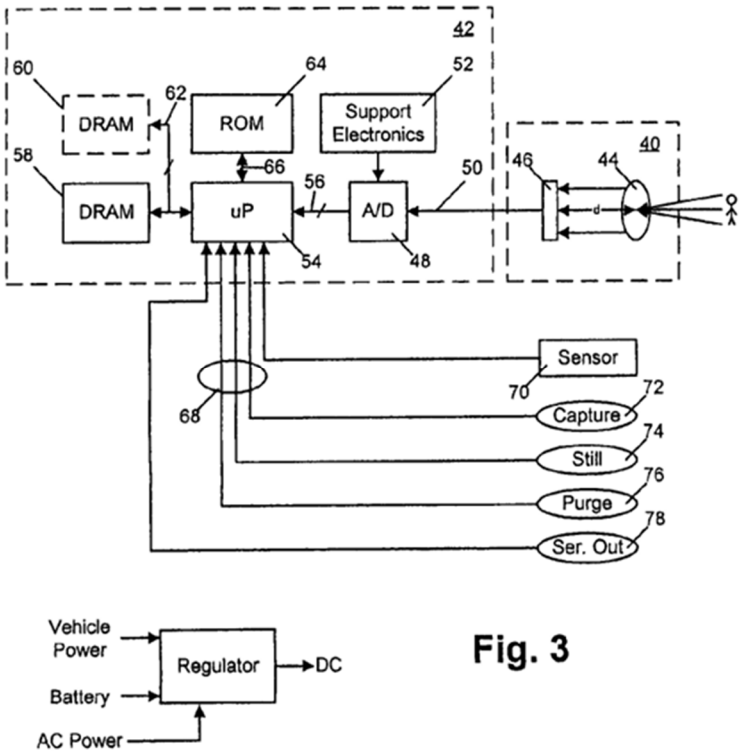


Fig. 3

Id. at Fig. 3. "As illustrated in FIG. 3, the recording device includes a camera 40 and video electronics 42." *Id*. at 5:41-43. "The central control processor 54 is coupled to a semiconductor memory 58 which comprises a DRAM a in preferred embodiment." *Id*. at 6:24-26. "The central control processor 54 may be provided with a number of inputs 68 which permit activation of the video recording device and control of the device by a user." *Id*. at 6:40-42. "Exemplary inputs comprise, an event sensor 70, a "capture' button 72, a "still" button 74 and a "purge" button 76." *Id*. at 6:43-44.

"Following the compression of the frame data, the central control processor stores the compressed data within the semiconductor memory 58." *Id*. 7:7-9. "The semiconductor memory 58 is structured as a circular memory buffer as illustrated in FIG. 4a." *Id*. 7:9-11.

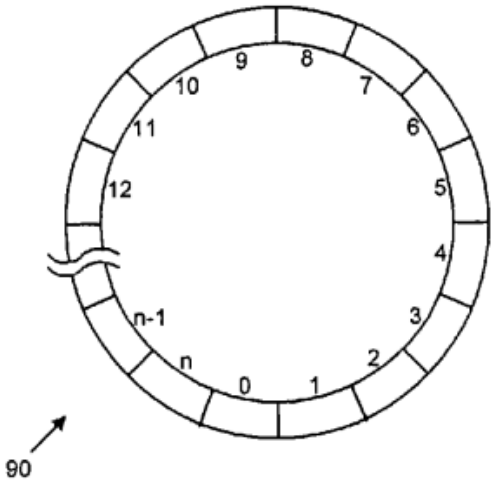


Fig. 4a

Id. at Fig. 4a.

> Thus, following compression, each compressed video frame is stored in the next successive frame buffer location and any frame data continued in such location is overwritten. For example, referring to FIG. 4 a, if the last frame were stored at location 3 of the circular buffer 90, the subsequent video frame would be stored at location 4 of the circular frame buffer. The video recording device, absent receipt of some trigger event from the sensor 54 or activation of other input by the user, continues to store captured frame data in successive locations of the circular buffer, overwriting previously received frame data stored in respective buffer locations with the most recently received frame data.

Id. at 7:11-22. "The operation of the circular buffer is described with more particularity below and with respect to FIG. 4b." *Id.* at 7:23-24.

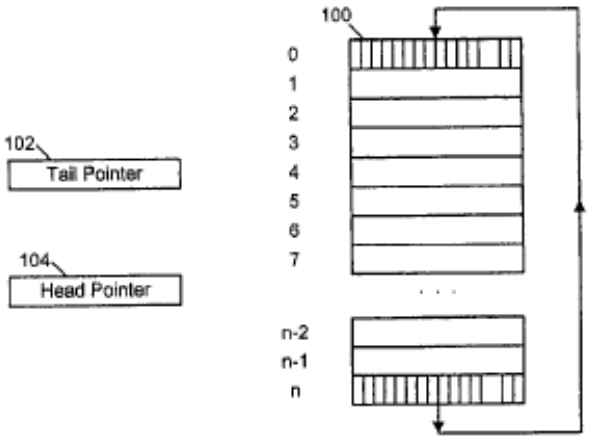


Fig. 4b

Id. at Fig. 4b.

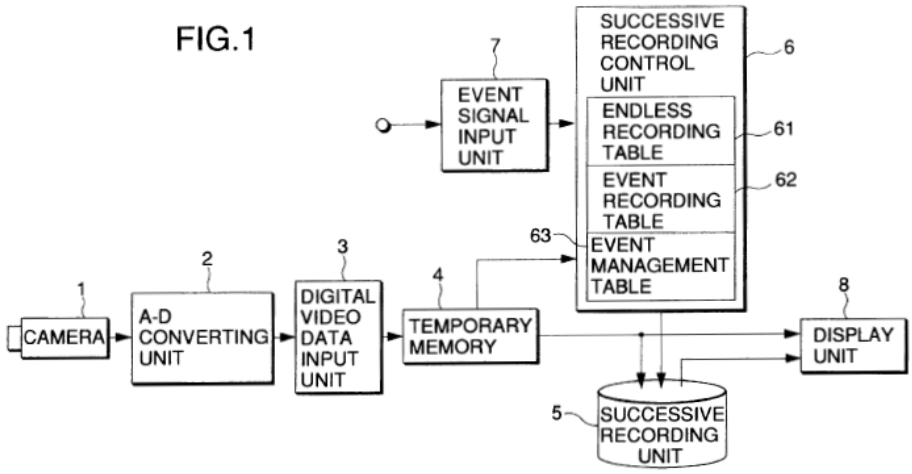
> Associated with the semiconductor memory buffer 58 (and additional buffer memory 60 if such is employed) are a tail pointer 102 and a head pointer 104. The head pointer points to the address of the frame buffer location for storage of the next frame data. Such address is offset in the respective frame to address the respective byte for the frame data being stored. For simplicity, the operation of the buffer is explained with respect to the frame addresses recognizing that plural locations are utilized within the buffer to store the data associated with any given frame.
>
> The head pointer 104 points to the location for storage of the incoming frame data. Thus, if the next frame data is to be stored in location 4, the head pointer is set to location 4. Once all of the data corresponding to frame 4 has been stored in the buffer, in normal operation and in the absence of a trigger event, the head pointer is incremented to point to frame number 5. As an example, assume a semiconductor memory buffer 58 is employed in which n=127; i.e. the frame buffer is capable of storing 128 frames of data. It is further assumed for purposes of the present example that it is desired to have half of the captured frames precede the trigger event and half of the frames follow the trigger event. The head pointer 104 is incremented following the storing of each respective frame. In normal operation, the tail pointer is incremented each time the head pointer is incremented, however, the tail pointer comprises an address which lags the head pointer by sixty four. In the circular buffer frame address 0 follows frame address n (i.e. 127 in the present example).

Id. at 7:27-61. "The still button 74 is optionally provided and coupled to the central control processor 54. Upon activation of the still button, the video electronics captures a video frame and

stores the frame within the buffer memory 58 or the extended buffer memory 60. In another embodiment of the video recording device, the captured frame is stored within a frame location within the circular buffer, however, the frame is protected from overwriting while video capture within the circular buffer continues." *Id*. at 9:34-38. "Such may be accomplished via tagging protected frame locations containing captured still frames and checking to determine whether a frame location is protected prior to writing to the frame location." *Id*. at 9:39-42. "It is noted that while storage of video frame data terminates in the case of a single trigger event such as in the situation in which the recording device is employed to preserve a record of a car crash, in the present application, recording of data continues since a Subsequent firing event may occur." *Id*. at 17:45-50. "To accommodate this objective, after the conclusion of data storage associated with one firing event, the head pointer 104 and the tail pointer 102 (or pointers in the event multiple buffer groups are employed as discussed above) defining the area(s) of the circular buffer memory, are stored in a table to allow later retrieval of the video data pertaining to each firing of the gun. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Patent No. 6,167,186 ("Kawasaki") discloses "a video recording device for recording a digitized video image inputted from a camera into a digital storage memory, and more particularly to a video recording device which is capable of retroactively reproducing a video image (event video image) generated when any event occurs while it records a video image monitored in real time." Kawasaki at 1:8-14.

PATENT OWNER
Ex 2004

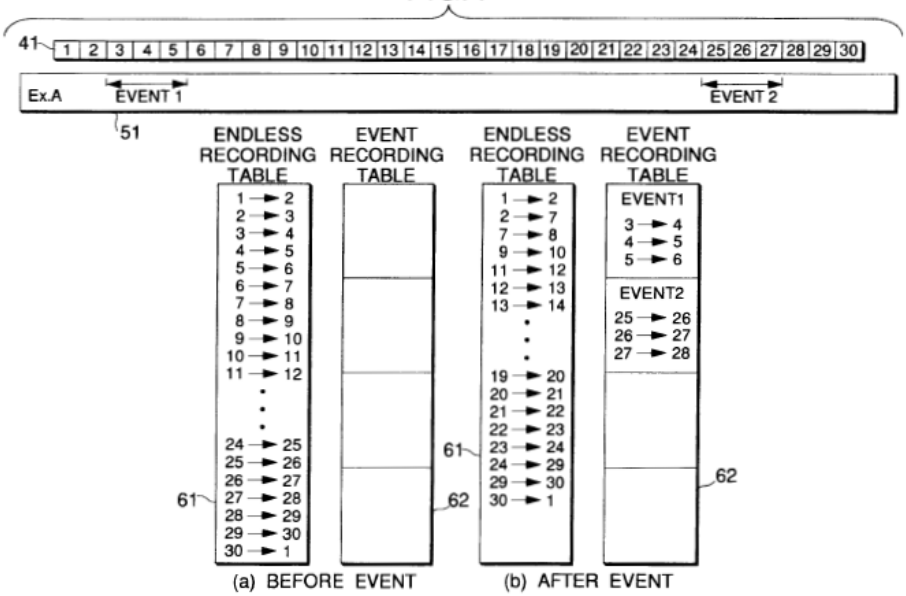


Id. at Fig. 1.

> Now referring to FIG. 4. an explanation will be given of a method of the processes of recording and reproducing in the successive recording control unit 6. Reference numeral 41 shows the state where the successive recording unit 5 is divided into a plurality of blocks (30 blocks in this example) labeled block numbers (pointers), respectively. Reference numeral 51 denotes a time zone of events which have occurred during the successive recording. The successive recording control unit 6 includes an endless recording table 61 and an event recording table 62, and manages the numbers of the blocks on which the digital video image is to be recorded as shown in part (a) of FIG. 4. The notation "1-2" in the part (a) represents that the recording block successive to block No. 1 is block No. 2. By provision of such a recording table, the blocks are overwritten in order from the block with an older record.

Id. at 4:30-45.

FIG.4



Id. at Fig. 4. "Next, an explanation will be given of the operation when the successive recording control unit 6 receives an event signal from the event signal inputting unit 7." *Id*. at 4:39-48. "Now it is assumed that the event signal is inputted while the recording is made at the position of block No. 4." *Id*. at 4:48- 50. "In this case, the video image from block No. 3 with a previously recorded image to block No. 6 with a video image after the event will be managed as an event video image." *Id*. at 4:50-53.

> Since the present invention always executes the recording in a manner of endless recording, the video image inclusive of the video image prior to inputting of the event signal can be managed as an event video image. Thus, event No. 1 will be managed on the event recording table as shown in part (b) of FIG. 4. Event No. 2 will be managed similarly. Now if only the event recording table is updated as it is, the event video images are overwritten to disappear at a period of endless recording. For this reason, the endless recording table must be also modified. As shown in the part (b), notation "2-7" represents that the block Nos. 3, 4, 5 and 6 are excluded from the loop of the endless recording. Likewise, notation "24-29" saves the event video image of event No. 2 from the endless recording. In this way, in the endless recording area, the recording area correlated with the event signal will not be thereafter used as an endless recording and not overwritten so that the event video image will be held for a longer period than the endless recording period.

Id. at 4:53-5:4. "Since the event video image when an event occurs needs not to be transferred to a separate area, the access time in the successive recording unit can be efficiently used so that the event video image can be reproduced with a sufficient allowance." *Id*. at 7:4-9.

"Moreover, in the video recording device according to the present invention, the successive recording control unit monitors the recording capacity of the endless recording area from which the event recording area is excluded, and when the recording capacity is short for the recording period of the endless recording, it restores the event recording areas as endless recording areas successively in order of older setting or lower priority." *Id.* at 2:32-39. "Still further, the video recording device according to the present invention further comprises a long-term storage unit, and in that the recording contents of the event recording area is transferred to the long-term storage unit so that the event recording area is restored as an endless recording area." *Id.* at 2:40-44. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Pat. No. 7,747,143 ("DeKeyser") discloses a "high performance digital video recorder." DeKeyser at Abstract. "The recorder also requires at least one hard disk drive and audio and video input analog signals (from a source such as video camera or broadcast media) as well as a suitable monitor for receiving output audio and video analog signals." *Id*. "Novel features of the preferred embodiment include use of an index table for disk addresses of recorded frames, a multi-port memory controller in the form of a field programmable gate array (FPGA), loop recording using dual channels, and dynamic JPEG compression compensation." *Id*.

> Certain applications benefit from the ability to record continuously. In surveillance, for example, it is useful to record until an alarm occurs, then to stop some time after the alarm. The recorder has captured time before, during, and after the alarm, which can be useful in determining the cause of the alarm. There is a need to provide support for such a loop recording mode.

Id. 1:54-60.

PATENT OWNER
Ex 2004

Index Table

During recording, individual frames of video are compressed and stored sequentially into contiguous regions of unused disk space, called "Available Records". A particular recording of a continuous sequence of video frames, called a "clip", may span many Available Records across many individual disk drives, up to the total amount of disk space available (see FIG. 2)

Id. at 3:58-64.

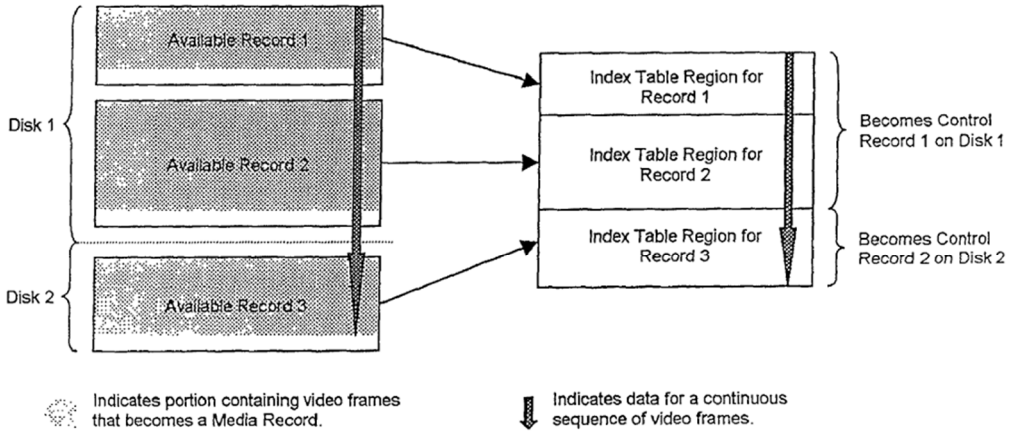


FIG. 2

Id. at Fig. 2. "The region used to store video frames within an Available Record becomes a "Media Record" (see FIG. 2)." *Id*. at 4:18-19. "The invention's firmware supports a 'loop record' mode where the recorder first fills available space, then continues recording by overwriting the oldest video." *Id*. at 2:38-40. "The invention manages and allocates disk space by maintaining in memory a directory of records on disk." *Id*. at 5:51-52.

As mentioned previously, after a recording is completed, the disk record directory also contains the following for each resulting Control Record and Media Record in the clip:

The unique clip identification number (Clip ID) for the clip.

The Sequence Number of the disk record within the clip.

The disk record directory thus provides the information the recording process needs to seamlessly record sequential video frames in proper order to disk across multiple Available Records. It also provides the information the recording process needs to

> "loop" video frame recording when it reaches the end of available disk space and overwrite previously recorded video frames in a continuous manner.

Id. at 6:20-33.

> 6. The method of recording of claim 5, further comprising protecting the first compressed frame from being overwritten by a third variable sized compressed frame via writing the third compressed frame at a memory location corresponding to at least one of the memory addresses of the first selected regions other than the first frame address.

Id. at Claim 6.

> 8. A method of storing and playing back a video recording having 1 though n variable length video frames, where n is at least 9 comprising: storing each of the n video frames in n different memory locations, respectively; using a random access frame index to store pointers to each of the n memory locations; using the frame index to obtain a frame address referencing one of the n different memory location; and using the frame address to directly locate, access, decompress, and playback any individual ones of the n video frames out of sequence within a single frame latency time while playing back any one of the other video frames.

Id. at Claim 8. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Pat. No. US 2007/0071395 A1 ("Boone") discloses a "method for video recording includes producing a first video data by an image sensor in a video recording device, storing the first video data in a temporary memory buffer in the video recording device, selecting at least a portion of the first video data in a semi-permanent data storage, and copying the selected portion of the first video data from the temporary memory buffer to the semi-permanent data storage in the video recording device." Boone at Abstract. "The temporary memory buffer can include a circular buffer that allows the recording system to write the most recent portion of the first video data over the oldest portion of the first video data in the temporary memory buffer. The video recording device can further include a user interface that allows a user to select at least a portion of the first video data to be copied to the semi-permanent data storage. The temporary memory buffer can include a data pointer configured to indicate the current recording location in which the

PATENT OWNER
Ex 2004

next video data is to be written in the temporary memory buffer." *Id.* at [007]. "The disclosed system and methods include the following advantages. The disclosed system and methods allow a photographer to not miss scenes or moments worth recording. The disclosed system and methods provide a video camcorder a novel 'temporary recording mode' in addition to the conventional 'idle mode' and 'record mode.' The 'temporary recording mode' allows scenes to be continually recorded in a temporary memory buffer without storing the video data in semi-permanent data storage on the camcorder. The disclosed system and methods allow historical scenes captured in the 'temporary recording mode' to be reviewed by the photographer. The photographer can make decision after the recording of the scenes whether the recorded video data is worth storing on the semi-permanent data storage such as a magnetic tape, DVD-R, CD-R. Only noteworthy scenes can be selectively recorded in the semi-permanent data storage while uninteresting scenes can be discarded. The disclosed system and methods allow interesting scenes to be recorded without filling up the memories in the video recording system with uninteresting video data. The disclosed system and methods are compatible with a variety of digital camcorders including those that use the MiniDV format as well as HD." *Id.* at [0008]. Therefore, it was known to treat a circular buffer as a single file and to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

U.S. Pat. No. US 6,421,080 ("Lambert") discloses an "image recording System and method for use with a surveillance system having at least two cameras provides true pre-event recording for multiple input sources to improve video on demand storage control. More specifically, an image recording subsystem is connected to the cameras for receiving generated video images, and storing the received images in a temporary Storage device having a Storage capacity large enough to store video images generated over a predetermined period of time. The image recording subsystem is arranged to continuously record video images into the temporary

PATENT OWNER
Ex 2004

storage device such as a cache memory, and in response to the occurrence of a triggering event, subsequently record the temporarily stored video images into a long-term storage device for later retrieval. The image recording system is arranged to determine the occurrence of overlapping triggering events, and automatically "rewind" the sequential long term storage process so that any images associated with an earlier triggering event but occurring in time after a later triggering event that have already been stored to long term storage are properly reordered to occur after any earlier occurring images associated with the later triggering event." Lambert at ABSTRACT. Therefore, it was known to treat to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

US Pub. No.: US 2007/0132773 A1 ("Plante 2") discloses "vehicle event recorder systems are arranged with three stage memories and special mechanism to manage those memories including transfer of data there between. Namely, a managed loop memory receives data from a video camera in real-time and continuously overwrites expired data implicitly determined no longer useful. Data in a managed loop memory is only passed to a more stable memory, a high capacity buffer memory, in response to an event having occurred. An event trigger produces a signal, which causes data transfer between the managed loop memory and an on-board, high-capacity buffer memory. The high-capacity buffer memory is suitable for storing video series associated with a plurality of events. Finally, a permanent data store is arranged to receive data from the high-capacity buffer memory whenever the system returns and falls within a predetermined proximity of a download station." Plante 2 at Abstract.

"Unlike common video systems arranged to capture continuous video, vehicle recorder systems are primarily designed to capture certain particular events occurring over very short time periods. For example, in vehicle recorder systems, it is not useful to produce a continuous video record of scenes and events around the vehicle throughout its service day. Rather, only particular

PATENT OWNER
Ex 2004

events associated with certain vehicle use are of interest. For example, those events associated with vehicle abuse. Further, traffic accidents and other forms of vehicle misuse yield occasions where it is desirable to have a brief video record of the circumstance(s) which led to and resulted from such misuse or accident. Thus the video recorder systems of this disclosure are characterized in that they are intended to capture short video sequences rather than video sequences over extended period of time. This detail has direct implications with regard to choice of memory arrangements. In this case, it is useful to arrange a first memory in a managed loop configuration whereby video is collected in real-time but constantly overwritten with later captured video data. Only when an important event occurs is data preserved by transfer to a high capacity buffer memory." *Id*. at [0039].

"As it is desirable in a vehicle recorder system that devices be very small and compact in size, certain memories which cannot be easily implemented as compact systems are not appropriate for vehicle event recorders. In example, large disk drive arrays, which have huge capacity and great redundancy, are memory systems not appropriate for these vehicle event recorder systems. However, memory systems commonly know as 'flash' type memory are highly useful. A flash type memory can be useful to hold video data associated with a plurality of discrete video events. Thus in preferred versions, a flash type memory buffer is coupled to managed loop memory such that each time an event occurs, data in managed loop memory is transferred to the flash memory. Flash memory having a high-capacity is operable for storing video data associated with many events." *Id.* at [0040]. "Finally, attention is directed to the nature of communications connectivity associated with a vehicle which includes computing systems. Since vehicles are not readily suited to be plugged into wired computer network systems, it is useful to implement special consideration when configuring a memory strategy for vehicle event recorders. Thus, an on-board memory may have a special relationship with a remote network memory. These two memories may be coupled

PATENT OWNER
Ex 2004

to each other only at specific times, for example, when a vehicle has returned to a download station." *Id.* at [0041]. "With reference to FIG. 2, a traffic accident between two automobiles car 21 and car 22 equipped with a vehicle event recorder system 24 having accelerometers 25 arranged as an event trigger. When a collision 23 occurs, the accelerometer initiates a data transfer between managed loop memory and a buffer memory to preserve video data collected immediately before and after the traffic accident. In similar fashion, car 26 equipped with a vehicle event recorder and accelerometer type event trigger illustrates that video of single vehicle accidents are captured as well." *Id.* at [0049]. Therefore, it was known to treat to index write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

Moreover, see references disclosing "Wireless Transmission of Files to a Remote Memory" discussed above in Section III.B.2.b and references disclosing "Remote Memory on Mobile Phone" in Section III.B.2.c above.

Additionally, the charted references and products described in Section III.A.1 also disclose indexing write-protected portions of a circular buffer as a second, distinct file in the circular buffer.

f. Motivations to Combine

A hallmark of the *KSR* approach to obviousness is flexibility. *See KSR,* 550 U.S. at 414-18 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court in *KSR* mandated flexibility in at least two respects: first with regard to the proper understanding of the scope of the prior art, and second with regard to appropriate reasons to modify the prior art. In its cases decided since *KSR*, the Federal Circuit has reiterated these two aspects of flexibility. *See, e.g., Intel Corp. v. Qualcomm Inc*., 21 F.4th 784, 795 (Fed. Cir. 2021) (the obviousness analysis is not "confined by a formalistic conception of the words teaching, suggestion, and motivation").

PATENT OWNER
Ex 2004

The Supreme Court instructed the Federal Circuit in *KSR* that persons having ordinary skill in the art have common sense, which may be used to glean suggestions from the prior art that go beyond the primary purpose for which that prior art was produced. *Id.*. at 421-22. Thus, the Supreme Court taught that a proper understanding of the prior art extends to all that the art reasonably suggests, and is not limited to its articulated teachings regarding how to solve the particular technological problem with which the art was primarily concerned. *Id*. at 418 ("As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). "The obviousness analysis cannot be confined . . . by overemphasis on the importance of published articles and the explicit content of issued patents." *Id*. at 419; *see also Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (recalling *KSR's* criticism of an overly rigid approach to obviousness that has "little recourse to the knowledge, creativity, and common sense that an ordinarily skilled artisan would have brought to bear when considering combinations or modifications," and discussing the importance of evidence showing "the knowledge and perspective of one of ordinary skill in the art" that may provide "critical background information that could easily explain why an ordinarily skilled artisan would have been motivated to combine or modify the cited references to arrive at the claimed inventions").

"Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR* 550 U.S. at 420. The Supreme Court emphasized the principle that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established function." *Id.* at

PATENT OWNER
Ex 2004

417. Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 421. The Federal Circuit has also clarified, moreover, that a proposed reason to combine the teachings of prior art disclosures may be proper, even when the problem addressed by the combination might have been more advantageously addressed in another way. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away.") (emphasis in original).

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well together. *See In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art "focus[ed] on the same problem ... c[a]me from the same field of art [and] ... the identified problem found in the two references correspond[ed] well").

The Supreme Court has further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill . . . ." *Id*. at 417.

Multiple teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine two or more of the prior art references set forth herein come from

PATENT OWNER
Ex 2004

many sources, including the prior art itself (individual references and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants reserve the right to present expert testimony on, among other things, the teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine any two or more of the prior art references presented in Exhibits A-1 through M-4 and herein. Certain of these rationales are discussed more specifically below. The fact that other rationales are not discussed more specifically should not be interpreted as an admission or concession that the other rationales do not apply.

As further described below, motivations to combine the teachings of the prior art references disclosed herein are found in: (1) the knowledge of persons of ordinary skill in the art, including the express, implied, and inherent teachings of the prior art references themselves as described herein and in Exhibits A-1 through M-4, and the admitted prior art of the Asserted Patents; (2) the fact that the prior art is generally directed towards the same subject matter as the Asserted Patents; (3) market forces and design incentives, including the need to address technical issues and suggest similar solutions; and/or the predictable results obtained by applying known techniques to modify existing solutions.

(1) Same Field of Technology

Each of the identified prior art references relate to the field of digital recording technology. The references disclose recording systems using cameras and digital recorders to save events. Many of the references are directed to surveillance systems for law enforcement.

A person of ordinary skill in the art would naturally look to these references, related patents, patent applications, publications, and related commercial products/systems to provide insight into how the industry/field as a whole, inventors, authors, or companies viewed and applied these

PATENT OWNER
Ex 2004

inventions, teachings, and commercial products/systems. Based on their related disclosures, one of ordinary skill in the art at the time of the invention would have been motivated to apply the teachings from one reference to another in the same way.

(2) Market Forces and Design Incentives Drove Similar Solutions in the Prior Art

Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. Indeed, the need to capture pre-event and post-event video data and to preserve that data was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the prior art references identified herein. Moreover, because there were a finite number of predictable solutions for capturing event data, including data from before a triggering event, and preserving it, a person of ordinary skill in the art had good reason to pursue and/or combine known options and related applications.

(3) Combination of Known Methods/Techniques/Elements Yields Predictable Results

Generally, motivation to combine any of the references for the Asserted Patents with other references exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. The need to provide a way to capture pre-event and post-event video data and to preserve that data, was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the references identified above.

Moreover, the claimed invention is built upon technology that significantly pre-dates the invention. As the Asserted Patents recognize, it was known to continuously store images in a looping (circular) memory, and upon receiving a trigger signal, protect a portion of the memory.

PATENT OWNER
Ex 2004

See e.g., '752 patent at 1:35-46. The Asserted Patents also recognize that it was known to preserve data both before and after the trigger signal, for example, 20 seconds before and 10 seconds after the accident. *See e.g.*, *Id*. at 1:30-34. Additionally, it was known to protect the recorded memory until it was offloaded or reset. *See e.g.*, *Id*. at 1:45-46. For example, it was known to transfer important portions of the buffer wirelessly to a central office. *See e.g.*, '034 patent at 1:42-46.

3. Group 2: U.S. Patent No. 8,310,540

a. Exemplary Combinations

The following combinations are merely exemplary and provided as examples of combinations that render the Group 2 Asserted Claim invalid. Defendants' identification of exemplary combinations does not preclude Defendants from identifying other invalidating combinations as discovery progresses and based on, for instance, any changes permitted to Plaintiff's infringement contentions, fact discovery (including that from third parties), claim construction positions taken by Plaintiff, or any order by the court on claim construction.

Exemplary Combinations	**USPN 8,310,540 Claim**
Chen in view of any of the references discussed and referenced in Section III.B.2.b	1
Ely in view of any of the references discussed and referenced in Section III.B.2.b	1
Fielder in view of any of the references discussed and referenced in Section III.B.2.b	1
Fiore in view of any of the references discussed and referenced in Section III.B.2.b	1
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.b	1
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.b	1
Lagassey in view of references discussed and referenced in Section III.B.2.b	1
Plante in view of any of the references discussed and referenced in Section III.B.2.b	1
Vanman in view of any of the references discussed and referenced in Section III.B.2.b	1
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.b	1

PATENT OWNER
Ex 2004

Exemplary Combinations	USPN 8,310,540 Claim
Chen in view of any of the references discussed and referenced in Section III.B.3.c	1
Ely in view of any of the references discussed and referenced in Section III.B.3.c	1
Fielder in view of any of the references discussed and referenced in Section III.B.3.c	1
Fiore in view of any of the references discussed and referenced in Section III.B.3.c	1
Kawasaki in view of any of the references discussed and referenced in Section III.B.3.c	1
Kirmuss in view of any of the references discussed and referenced in Section III.B.3.c	1
Lagassey in view of references discussed and referenced in Section III.B.3.c	1
Plante in view of any of the references discussed and referenced in Section III.B.3.c	1
Vanman in view of any of the references discussed and referenced in Section III.B.3.c	1
Yerazunis in view of any of the references discussed and referenced in Section III.B.3.c	1
Chen in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Ely in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Fielder in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Fiore in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Lagassey in view of references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1

PATENT OWNER
Ex 2004

Exemplary Combinations	USPN 8,310,540 Claim
Plante in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Vanman in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.b in further view of any of the references discussed and referenced in Section III.B.3.c	1

b. References Disclosing Memory Loop as a Single File

References disclosing "treating the memory loop as a single file" are discussed above in Section III.B.2.d.

c. References Disclosing Allowing Editing of Imaged Data in Memory Loop

As of the earliest priority date for the Group 2 patent, it was known to allow editing of imaged data in a memory loop. For example, releasing protected portions of memory from protection, after transferring to a more permanent memory, frees up memory loop space for subsequent recording. *See e.g.*, Kawasaki at 6:3-7. Furthermore, protecting additional portions of memory can be advantageous to preserve additional image data associated with as event. For example, if the default pre-event recording time failed to capture the full event.

For example, U.S. 5,465,120 ("Schultheiss") discloses:

> A spiral buffer for a non-linear editing system digitizes and stores an input video signal as it is simultaneously being cataloged by an operator. The digitized video signal is stored in a circular buffer of a random access non-linear storage device, such as a disk recorder, with the oldest video being overwritten by the newest video when the buffer is full so long as the oldest video has not been marked by the cataloging process to be kept. The marked video is edited, further pruning the video in the buffer. The pruning of the video in the circular buffer results in a spiral shrinking of the buffer.

Schultheiss at Abstract.

> A linear editing system uses a linear video source, such as a camera or video tape recorder. As the video is played from the linear video source, an operator, either

> with manual annotations and/or computer assisted annotations, catalogs the material presented by the video. Cataloging is a process by which the operator identifies segments of the video that are to be kept or discarded. After the video has been cataloged, then the editing process is used to sort, order, crop and otherwise alter the video that has been kept by the cataloging process. In this manner a large amount of video may be reduced to a desired time frame, for example, reducing five hours of video to a twenty-four minute situation comedy episode.

Id. at 1:10-22. "Accordingly the present invention provides a spiral buffer for non-linear editing that minimizes the amount of storage space required." *Id*. at 1: 57-59.

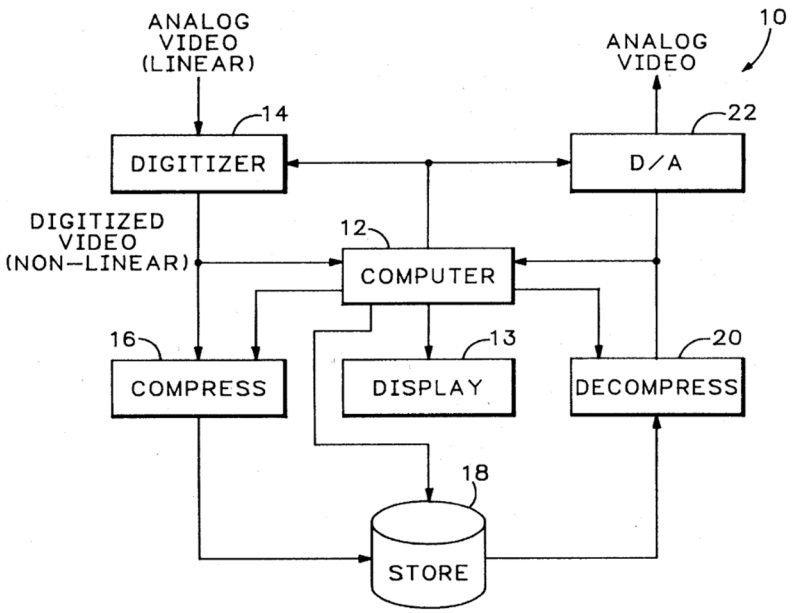
> As an operator performs a cataloging step for an input video source, everything is converted from a linear to a non-linear form automatically, commonly called video capture. A circular buffer of user configurable size on a random access video disk storage medium is used to store this material. The space in the circular buffer occupied by the least recently used video material is reclaimed as more space is needed. Any video material that the operator marks during the cataloging step as "in" is marked as not discardable and retained. In this way the circular buffer shrinks as the editing production grows, "spiraling" into a smaller size.

Id. at 1:59-2:2.

> Referring now to the Figure an editing system 10 includes a computer 12 that controls the editing process and with which an operator interfaces. Analog video from a linear source, such as a camera or video tape recorder, is processed by a digitizing circuit 14 to produce a digital signal while it is simultaneously viewed on a display 13 by an operator for cataloging and conversion into a non-linear form for storage, i.e., video capture. The digital signal is processed by the computer 12 for automatic annotations, such as scene changes and the like. The computer 12 also provides a mark for the digital signal in response to an operator catalog input which indicates whether the particular segment is to be kept or discarded. The digital signal may be processed by a compression algorithm 16 and then stored on a random access non-linear storage device, such as a disk recorder 18. The computer 12 maintains a list of the locations for each video segment together with the associated catalog mark, the list having a storage start address, length and catalog mark. Where the segment is broken into smaller pieces for storage, the list includes a point to the next piece of the segment.

Id. at 2:25-44.

PATENT OWNER
Ex 2004

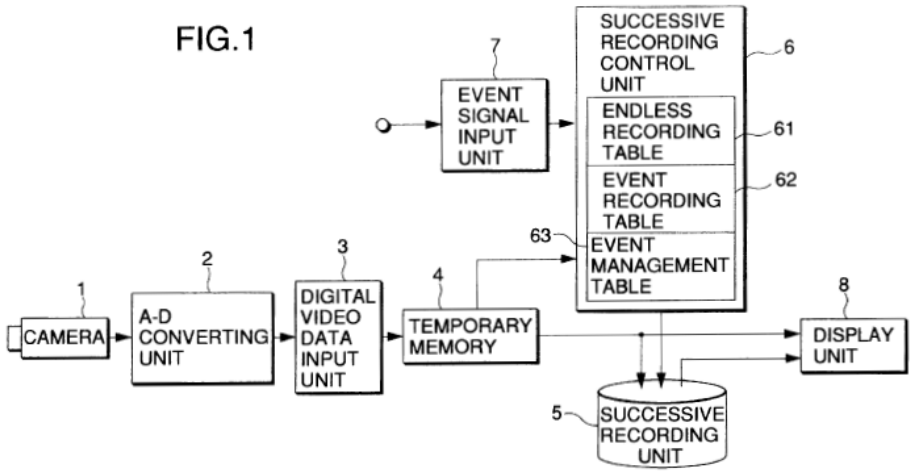


Id. at Fig. 1.

> All of the incoming video material, whether analog or digital, is captured as it is being cataloged by the operator. A circular buffer, configurable in size by the operator, within the disk recorder 18 is used for storing the captured video signal as a nonlinear signal. As the circular buffer is filled up, the oldest video segments are subject to being overwritten by the newest video segments. However the computer 12 only overwrites the oldest video segments which are not marked during the cataloging process by a "save" indication. In this manner the circular buffer need not be so large as to store the entire video signal to be edited, but only the marked video segments. The operator may recall any segment from the disk recorder 18 and further edit it by pruning it, breaking it up into lesser segments, some of which are kept, and the like. As the "weeding" continues the circular buffer shrinks in size to hold only those segments that are retained. At the conclusion of the editing process the segments are read from the disk recorder 18 in a sequence that produces a final linear video product that may be stored on a linear storage device.

Id. at 2:56-3:8. Therefore, it was known to allow editing of imaged data in a memory loop.

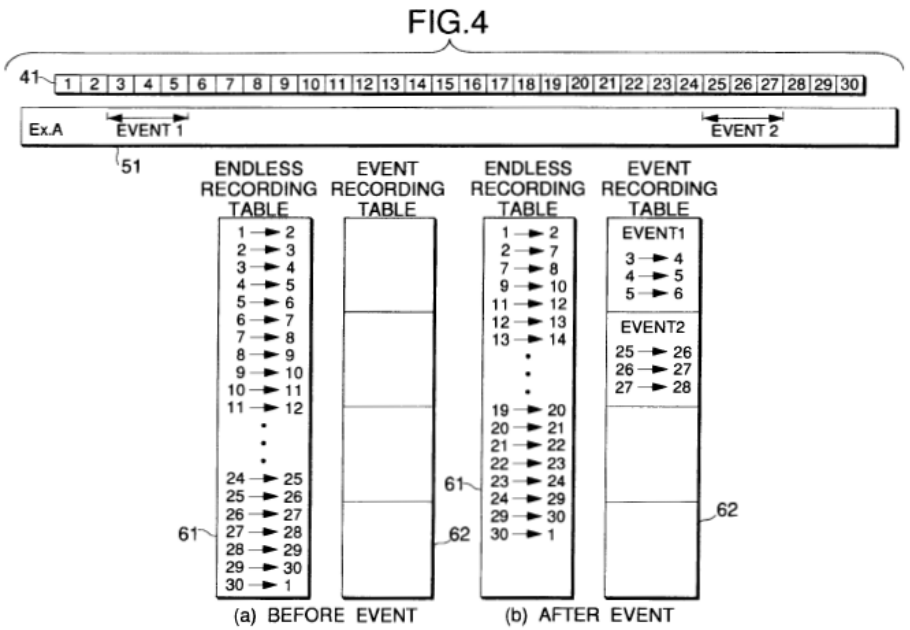
For example, U.S. Patent No. 6,167,186 ("Kawasaki") discloses "a video recording device for recording a digitized video image inputted from a camera into a digital storage memory, and more particularly to a video recording device which is capable of retroactively reproducing a video image (event video image) generated when any event occurs while it records a video image monitored in real time." Kawasaki at 1:8-14.



Id. at Fig. 1.

> Now referring to FIG. 4. an explanation will be given of a method of the processes of recording and reproducing in the successive recording control unit 6. Reference numeral 41 shows the state where the successive recording unit 5 is divided into a plurality of blocks (30 blocks in this example) labeled block numbers (pointers), respectively. Reference numeral 51 denotes a time zone of events which have occurred during the successive recording. The successive recording control unit 6 includes an endless recording table 61 and an event recording table 62, and manages the numbers of the blocks on which the digital video image is to be recorded as shown in part (a) of FIG. 4. The notation "1-2" in the part (a) represents that the recording block successive to block No. 1 is block No. 2. By provision of such a recording table, the blocks are overwritten in order from the block with an older record.

Id. at 4:30-45.



Id. at Fig. 4. "Next, an explanation will be given of the operation when the successive recording control unit 6 receives an event signal from the event signal inputting unit 7." *Id*. at 4:39-48. "Now it is assumed that the event signal is inputted while the recording is made at the position of block No. 4." *Id*. at 4:48- 50. "In this case, the video image from block No. 3 with a previously recorded image to block No. 6 with a video image after the event will be managed as an event video image." *Id*. at 4:50-53.

> Since the present invention always executes the recording in a manner of endless recording, the video image inclusive of the video image prior to inputting of the event signal can be managed as an event video image. Thus, event No. 1 will be managed on the event recording table as shown in part (b) of FIG. 4. Event No. 2 will be managed similarly. Now if only the event recording table is updated as it is, the event video images are overwritten to disappear at a period of endless recording. For this reason, the endless recording table must be also modified. As shown in the part (b), notation "2-7" represents that the block Nos. 3, 4, 5 and 6 are excluded from the loop of the endless recording. Likewise, notation "24-29" saves the event video image of event No. 2 from the endless recording. In this way, in the endless recording area, the recording area correlated with the event signal will not be thereafter used as an endless recording and not overwritten so that the event video image will be held for a longer period than the endless recording period.

Id. at 4:53-5:4. "Since the event video image when an event occurs needs not to be transferred to a separate area, the access time in the successive recording unit can be efficiently used so that the

event video image can be reproduced with a sufficient allowance." *Id*. at 7:4-9. "Moreover, in the video recording device according to the present invention, the successive recording control unit monitors the recording capacity of the endless recording area from which the event recording area is excluded, and when the recording capacity is short for the recording period of the endless recording, it restores the event recording areas as endless recording areas successively in order of older setting or lower priority." *Id*. at 2:32-39. "Still further, the video recording device according to the present invention further comprises a long-term storage unit, and in that the recording contents of the event recording area is transferred to the long-term storage unit so that the event recording area is restored as an endless recording area." *Id*. at 2:40-44.

> The first to third embodiments described above have an advantage that it has only to operate the management table to manage the invent video image. However, if events occur frequently, as shown in part (c) of FIG. 5, the area to be registered for event recording may increase so that the endless recording area cannot be assured. In order to obviate such a failure, the event management table 63 manages the area for event recording to decide whether or not the endless recording time can be assured. In this case, if the endless recording time cannot be assured, the event video images which are older or have lower holding priorities can removed in order from the event recording table, thereby restoring the corresponding areas as endless recording areas.

Id. at 5:62-6:7. Therefore, it was known to allow editing of imaged data in a memory loop.

Further, U.S. Pat. Pub. No. 2002/0191952 ("Fiore") "relates to a data recording and playback systems for monitoring processes or occurrences of events which allows the replay and/or analysis of a time sampled signal." Fiore at [0003]. "FIG. 2 shows a schematic illustration of the signal processor 10 in accordance with one embodiment of the present invention." *Id*. at [0043]. "As can be seen, the signal processor 10 is in communication with monitoring device 6 that provides an input signal data to the signal processor 10 such as a video, audio or other type of signal." *Id*. "The network 4 may be any type of a network such as a local area network, wireless network, wide area network, or the Internet." *Id*. at [0039]. "[I]n the networked embodiment of

the present invention as shown in FIGS. 1 to 4, the network allows transfer and access of data utilized and stored by the data recording and playback system of the present invention." *Id*. at [0077].

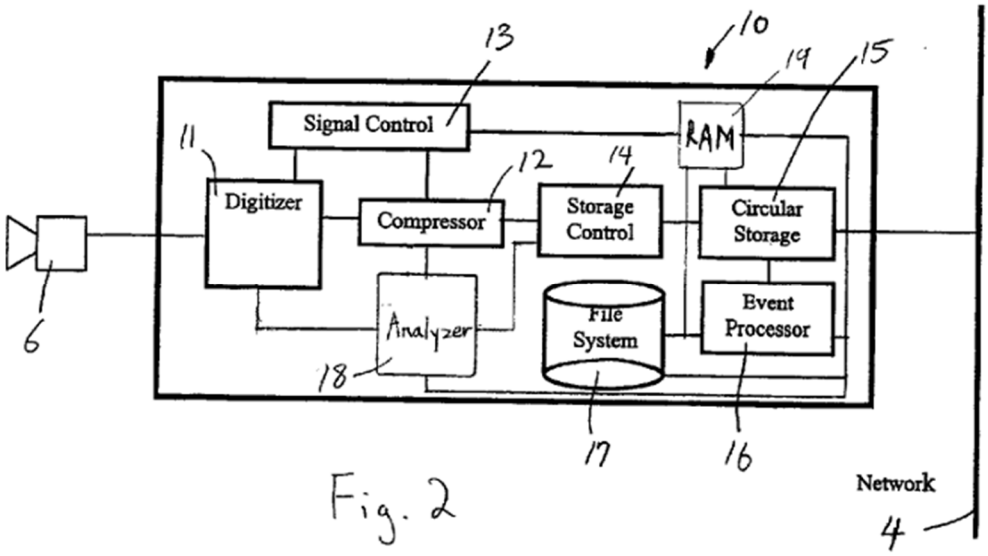


Fig. 2

Id. at Fig. 2. "The storage control 14 provided in the signal processor 10 receives the digitized and/or compressed input signal data from the monitoring device 6, and stores the input signal data and the analysis data in the circular storage buffer 15 together with a time stamp for each record." *Id*. at [0047]. "The signal processor 10 also includes an event processor 16 that is adapted to extract data frames starting from a data frame that is a predetermined number of data frames before the external event time provided by the server 20 as described in further detail below, and ending a predetermined number of data frames after the external event time." *Id*. at [0048]. "The extracted data frames are then stored in file system 17 thereby providing a permanent record of the data frames before, during, and after the event prior to the data frames being overwritten in the circular storage buffer 15 by more recent data frames." *Id*. "[T]he event processor 16 of the present embodiment is also adapted to mark the input signal data being stored in the circular storage buffer 15 when an event occurs to thereby flag the location of an occurrence of an external event in the

circular storage buffer 15, signal to mark the input signal data being provided by the event processor 16." *Id*. "Further in this regard, the event signals may be initiated manually by the user of the data recording and playback system 10 as well using an input device such as a keyboard, mouse, etc. so that a particular data frame in the circular storage device may be manually marked." *Id*. at [0049]. Therefore, it was known to allow editing of imaged data in a memory loop.

U.S. Pat. No. 8,350,907 ("Blanco") "is related generally to surveillance systems, and more particularly to a method of storing digital video captured by an in-car video system." Blanco at 1:6-8. "Referring to FIG. 1, which provides a simplified block diagram of a first method of long term video storage, a large digital storage medium 110 (for example, a hard disk drive having storage capacity of greater than 50 gigabytes) is utilized in a vehicle 120, such as a police cruiser, to record and store many hours of video." *Id*. at 3:45-50. "The occurrence of external triggers or incidents markers such as the emergency Lights, Siren, Car door opening, etc., that may be part of the video record, may also be searched in some applications of the invention." *Id*. at 4:37-40.

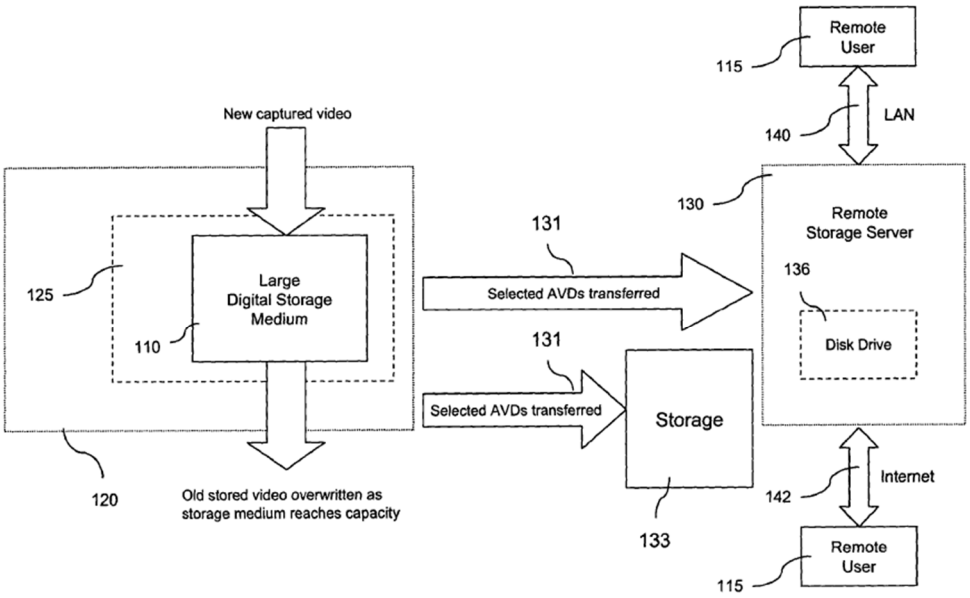


FIG 1

Id. at Fig. 1. "Typically, the large digital storage medium 110 would be incorporated into an in-car video system, designated by reference number 125 in FIG. 1 which typically includes a DVR, camera, microphone, control unit and monitor (not shown in FIG. 1)." *Id*. at 3:50-54. "Once the large digital storage medium 110 reaches its maximum capacity, the oldest video is erased (i.e., overwritten) and its space is taken by the newest video as shown in FIG. 1." *Id*. at 3:57-60. "[S]elected video recordings, for example those designated as being of interest or of other importance, may be transferred to conventional storage media…(collectively designated by reference numeral 131 in FIG. 1)." *Id*. at 3:62-64. Figure 3 depicts that "the removable media may be replaced with a wireless link, enabled for example, through the use of a wireless transmitter 310 as shown." *Id*. at 4:41-44.

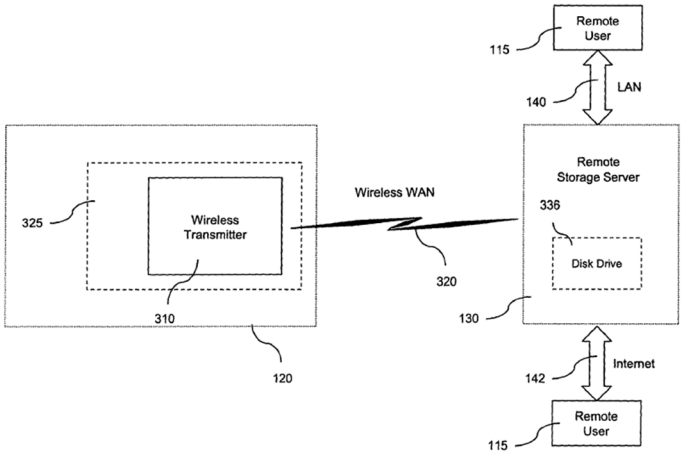


FIG 3

Id. at Fig. 3. "The video data is transferred to a storage server 130 coupled to the WAN." *Id*. at 4:46-47.

> A method of storing digital video is provided where an original video clip is selected, according to selection criteria, from video clips stored on a digital storage medium. The frame rate associated with the selected video clip is lowered and a downgraded version of the original video clip is written to a digital storage medium at the lowered frame rate. The original video clip may then be overwritten or erased to thereby reduce the storage space requirements for the downgraded video clip by approximately the percentage reduction in downgraded frame rate.

Id. at Abstract.

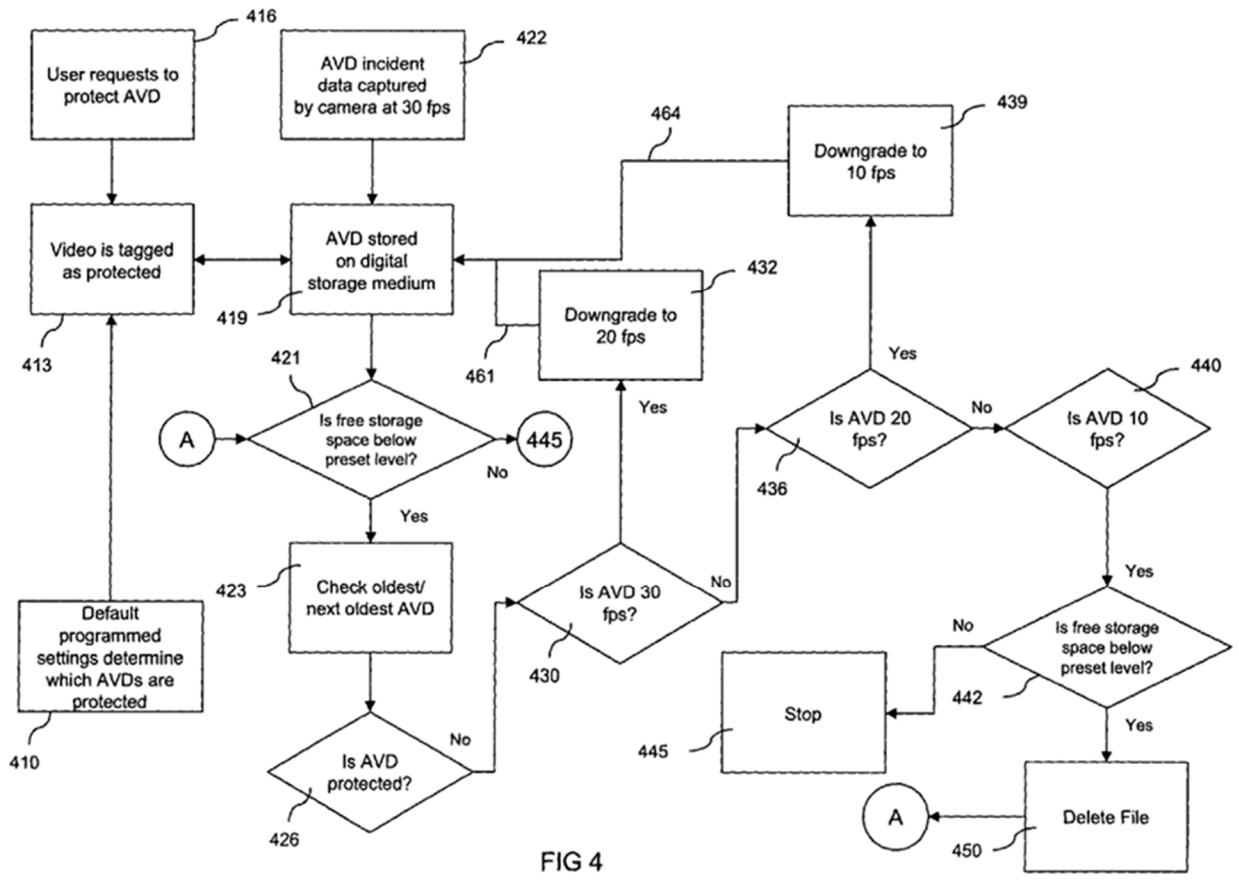
> Advantageously, the inventive method enables the amount of recorded video stored within individual vehicles to be substantially increased. Agencies may be able to store many months of video inside the cars, to thereby negate or lessen the need for expensive storage hardware and complex processes to be implemented within the agency.

Id. at 3:17-22. 'To maintain the desired free space on the digital storage medium, in an illustrative example, the oldest video clip is converted from 30 fps to an arbitrary lower rate (for example, 15 fps or less as may be determined by the agency)." *Id*. at 5:54-57.

> Returning back to FIG. 4, as shown at block 423-426, if the oldest AVD is not protected (via the tagging process described above), then process control passes to block 430. If the AVD is currently at 30 fps, then as shown in block 432, the AVD is downgraded to 20 fps and the downgraded AVD is written to the digital storage medium as indicated by line 461. The original AVD (i.e., the version on which the downgraded version is based) is then marked as free to be overwritten (for example, by downgraded AVDs or new video recordings) or erased from the digital storage medium as indicated by block 450 if additional space is required to maintain the preset level on the digital storage medium.

Id. at 6:1-12.

PATENT OWNER
Ex 2004



Id. at Fig. 4. Therefore, it was known to allow editing of imaged data in a memory loop.

U.S. Pub. No. 2004/0008255 ("Lewellen") "generally relates to video systems, and more particularly relates to video systems for vehicles such as police cars." Lewellen at [0002]. Lewellen discloses that "a vehicle video system includes a small camera in the passenger area." *Id*. at [0010].

> The vehicle video system records video information on a digital video recorder that uses digital media such as a hard disk drive, recordable CD (CD-R), rewritable CD (CR-RW), or writable Digital Video Disc (DVD). The vehicle video system includes a local wireless interface, such as a Bluetooth-compatible interface, that automatically connects to a compatible device in the parking area of the vehicle that is coupled to a database. In this manner, the digital video information collected by the vehicle video system is automatically transferred to the database when the vehicle is parked, removing the need for any human intervention for the logging and cataloging of video tapes. The local wireless interface of the vehicle video system also allows other devices, such as a handheld device or a vehicle video system in a different vehicle, to access the stored digital video information.

Id. "Vehicle video system 300 includes a local wireless interface 390." *Id*. at [0031]. "Local wireless interface 390 provides a significant advantage over the prior art vehicle video systems." *Id*. "Devices enabled with Bluetooth wireless technology will be able to: free electronic accessories and peripherals from wired connections" and "exchange files." *Id*. at [0035]. "Products that incorporate a Bluetooth interface are already on the market." *Id*. at [0040]. "Nokia Corp. is selling its Bluetooth 6310 phones in Europe, and are expected to be available in the United States sometime in 2002." *Id*. "Bluetooth wireless technology…provides links between mobile computers, mobile phones, other portable handheld devices, and connectivity to the Internet." *Id*. at 32.

"The benefit of providing the local wireless interface 390 is that digital information recorded by the digital video recorder 370 may be automatically transmitted and received to and from compatible devices." *Id*. at [0043]. "As shown in FIG. 5, one example of a compatible device is a parking area data transfer mechanism 510." *Id*. "A second example of a compatible device is a portable data transfer mechanism 520." *Id*. "A third example of a compatible device is a vehicle video system 300A in a different vehicle." *Id*. For example, "[i]n response to the upload command, the vehicle video system transmits digital data to the parking area data transfer mechanism (step 860)" including "recorded digital video data." *Id*. at [0049]. "[T]he present invention relieves the law enforcement officer from the chore of handling video tapes." *Id*. at [0045]. More particularly:

> In response to the upload command, the vehicle video system transmits digital data to the parking area data transfer mechanism (step 860). This data includes the recorded digital video data. If the upload is not successful (step 870=NO), the transmission step is repeated until the upload is successful (step 870=YES). Upon successful upload of the stored digital information, the parking area data transfer mechanism transmits a "successful upload" message to the vehicle video system (step 880). In response, the vehicle video system may delete the uploaded data (step 890), creating space for storage of more digital information in the future. …

PATENT OWNER
Ex 2004

> Depending on the amount of video information that can be stored in the vehicle video system, it may be that no information is deleted until the media used to store the information (e.g., a hard disk drive) is a certain percentage full. The cost of hard drive space has become so inexpensive in recent years that it is possible to store several days worth of digital video information on a single hard disk drive. In such a system, a first-in last-out scheme could be used to delete the oldest information when space is needed for new information. Of course, many variations are also possible within the scope of the preferred embodiments, which expressly extend to any scheme for maintaining or deleting information stored by the digital video recorder in the vehicle video system.

Id. at [0049]. Therefore, it was known to allow editing of imaged data in a memory loop.

PCT Pub. No. WO2004/036926 ("Pearlson") discloses "methods and systems for acquiring, storing, and distributing video and telemetry." Pearlson at 1:28-29. "One embodiment is a recording and transmission system comprising: a recorder mountable in a police vehicle configured to record video and meta-data synchronized with the video, wherein the recorded video includes a plurality of segments having fixed lengths, the recorder including a wireless transmitter configured to wirelessly transmit the recorded video segments and meta-data, wherein the meta-data includes: data related to vehicle status; subjective time information; objective time information; serial data." Pearlson at 2:1-6. "One embodiment of the recorder 100 provides event-based recording that enables users to activate a recording session by either pressing a button or activating another device used as an event trigger such as a vehicle light bar, or an alarm contact or other sensor." Pearlson at 10:3-9. "In one example embodiment, a ring buffer in a recorder, such as recorder 100, captures video, audio and data until an instruction or trigger to start the recording process occurs." Pearlson at 8:18-21.

The system includes a mobile video/audio data recorder 100 which records high quality video/audio and serial data telemetry while simultaneously transmitting specially formatted live video/audio and information to personnel using a variety of reception devices or terminals." Pearlson at 7:3-7; Fig. 1. For example, access to and display of videos and meta-data can be

PATENT OWNER
Ex 2004

provided using a standard browser…and a standard media player…executing on a personal or server computer, personal digital assistant, cell phone, and the like, thereby lowering the client cost and easing maintenance. Pearlson at 5:14-18. Pearlson further discloses that "the frame rate, bit rate and resolution for transmission can be selected based on the wired or wireless network and the receiving terminal." Pearlson at 7:23-24. "For example, some devices, such as palm-held personal digital assistants (PDAs) and hybrid cell phones may have limited display resolution and processor power." Pearlson at 7:24-26. "In applications where such devices are used to view the video, such as by remote field personnel performing surveillance, the recorder l00 maintains compatibility with the target device by optionally formatting video specifically for the target device." Pearlson at 7:26-29. Therefore, it was known to allow editing of imaged data in a memory loop. "Once the files have been transferred and verified, the assembler 120 notifies the recorder 100 that the file upload is complete, and instructs the recorder 100 to clear its record volume for new recordings." Pearlson at 10: 17-19. Therefore, it was known to allow editing of imaged data in a memory loop.

U.S. Pat. No. 6,624,611 ("Kirmuss") "addresses the prior art problems by providing in-vehicle video recording with buffering for capturing video prior to a trigger event." Kirmuss at 4:3-5.

> Thus, in one aspect the present invention is directed to a mobile event-recording device that includes distributed elements within, attached to or otherwise mounted to a mobile vehicle, with the principal elements being: a first camera providing a real-time video signal that corresponds to an observed outboard live-motion scene; and a digital video recorder receiving the video signal provided by the camera and recording the video signal in response to a trigger signal (e.g., an activation switch for a light bar or siren, an air bag sensor signal indicating air bag deployment, or depression of an emergency button or a dedicated recording activation switch). The video recorder uses a buffer to receive and store the video signal so as to preserve the video signal during a programmable sliding (or rolling) time interval prior to the triggering event.

PATENT OWNER
Ex 2004

Id. at 6:19. "In one example, the resulting system includes a built-in video ring buffer illustrated in FIG. 6B that allows the system to capture pre-incident, pre-siren/chase-light activation video, video, and this video is then captured and stored on the hard disk with the actual running of the alarm/siren/chase-light, as well as for a period after these devices are turned off. In this embodiment, the system provides critical information before, during and after an incident." *Id*. at 33:48-54. "The device further supports a general-purpose programmable computer terminal for controlling operation of the video recorder, generating trigger signals and/or providing text overlay data." *Id*. at 4:42-45. "With regard to data overlay in element 151, input text data may be converted into bitmap format and then superimposed on the input video signals 102, while input binary signals (e.g., for siren on/off) may be first converted to text (e.g., "Siren On") and then converted to bitmap format and superimposed in element 151." *Id*. at 13:56-61. "Moreover, unlike conventional videocassette recorders, a system of the present invention preferably can provide for: (i) index-based searching of specific portions of the audio/video based on the recorded input signals such as 'siren on', or 'chase lights on' or 'brakes on'." *Id*. at 14:28-32.

> In addition, recorded incident triggers such as activation of the chase lights, may also be used to search the video and audio data, rather than just "fast rewind/fast play" of video as is traditional with VCR technology. Incident triggers not only start and stop the recording, with pre- and post-alarm video capture if so programmed, but if the system is in continuous record mode, the addition of these alarm/system input sensors preferably marks the video, and when in playback mode with password authorization, all video corresponding to these "events" may be easily retrieved in the order that they were collected.

Id. at 35:53-56. Therefore, it was known to allow editing of imaged data in a memory loop.

As another example, U.S. 2002/0131768 ("Gammenthaler 1") and U.S. 2004/0201765 ("Gammenthaler 2") disclose a record after the fact feature:

> However, the embodiment of FIG. 2 has the additional capability to record after-the-fact events which the officer may have missed because the record mode was not on when the event occurred. This is provided by the use of a hard disk 60 which stores all compressed video and audio data output by the compression process or

PATENT OWNER
Ex 2004

> the optional anti-tampering circuit at all times regardless of whether tape recording mode is on or off. This system also has the ability to record data from either of two-different video cameras, one of which may be wireless, and either of which may be selected and the ability to record audio from either of two different microphones, one of which may be wireless, and either of which may be selected.

Gammenthaler 1 at [0046]; *see also* Gammenthaler 2 at [0045]; U.S. 7,190,882, filed Mach 19, 2001.

> All the data on line 100 is continuously recorded on a 15 gigabyte hard drive 60 which is used as a FIFO memory. Data can be archived off the hard disk 60 to the digital video tape recorder 52 via bus 102. After the fact recording to tape can be accomplished using the system controller. If an officer wants to record to tape all the events that happened in the last 10 minutes or starting from some particular time of day he remembers to be before a significant event, he can give a command via control panel 20 to the system controller 54. Part of the data continuously recorded on hard disk 60 is time of day data supplied by clock 104 and/or a frame count signal.

Gammenthaler 1 at [0055]; *see also* Gammenthaler 2 at [0054].

> The system controller 55 can be controlled in this embodiment by the officer via control panel 20 to send a command to the hard disk 51 to cause it to playback all recorded data starting from a specific frame number or a specific time of day or going back from the present time by a specified number of minutes on output 57 to be archived by tape recorder 52. The hard disk then finds the appropriate data in any way and outputs it on line 57. In some embodiments, the hard disk has a cache memory in which frame number and time of data data are recorded along with the track and sector or block number on the hard disk where the corresponding video, audio and status data for that frame number and/or time of day were recorded. This provides an after-the-fact recording capability in case the officer did not have the in-car video system in record mode when some significant event happened. In alternative embodiments, since the hard disk 51 is used as a FIFO and will be overwritten when it reaches its capacity, the system controller can be programmed to automatically cause the digital video tape recorder to record all data on line 53 when the hard disk reaches capacity.

Gammenthaler 1 at [0060]; *see also* Gammenthaler 2 at [0059]. Therefore, it was known to allow editing of imaged data in a memory loop.

Additionally, U.S. Provisional Application No. 60/617,988 ("Vanman"), associated patent U.S. 8,081,214 and the Watchguard DV-1 product discloses a "Record After-the Fact" and tagging

PATENT OWNER
Ex 2004

feature. Specifically, "[r]ecording after-the-fact permits manual chapter event creation to be performed." Vanman at 5.

> If a user wants to go in after the fact and copy some video that wasn't marked as an event, the user can go back and manually put in a new start and stop point. The system will automatically grab that section of video and feed it to the DVD drive 85 and make a new chapter. The common use of that feature will be by, for example, internal affairs in order to investigate some alleged misconduct. Of course, embodiments of the system may be applied to areas outside of the area of law enforcement, and then the conduct referred to may be an officer or another party in an organization utilizing the methods and systems of the present invention.

Id. at 5.

> Record After-the-Fact – Manual Chapter Event Creation
>
> It is very desirable for users to be able to retrieve audio and video data from the hard drive of time periods that they did not previously mark to be "recorded" to the DVD disc. The product provides the ability for users (or supervisors) to rewind footage on the hard drive to the point in time of interest, insert a new "event start marker" and then insert a new "event stop marker." The user can choose to transfer either the high or lower bit rate version of the event. The system will then automatically transfer the newly marked event to the DVD disc as a new chapter.
>
> Some common uses for this feature will be by law enforcement investigators when they want to investigate claims of officer misconduct.

Id. at 12; WatchGuard Video DV-1 Product, WatchGuard Video, [MOTOROLA_004959-MOTOROLA_004961], October 6, 2004 at 2-3.

> Record-After-the-Fact (Manual Chapter Creation)
>
> The feature allows you to retrieve any video, up to a day later from the integrated hard drive – even if it was not originally intended to be recorded (initiated by the lights, siren, or record key). This is great for investigations or instances where the officer passed by a location that became crime scenes shortly there-after.
>
> This is how it works: the DV-1 temporarily saves video footage to the hard drive continuously in an endless buffer loop that is constantly over-writing the oldest video. Both a normal and a high quality MPEG stream is written to the hard drive all of the time. The length of this buffered period depends upon various settings (image quality selection and the number of DVD disc images saved as backups). Typically, the system will have all of the video data from the most recent 24 hours of operation (whenever the vehicle is running).

PATENT OWNER
Ex 2004

> To add "un-recorded" video to a DVD disc, you simply rewind the hard drive video to a point of interest, insert a new record point, then fast forward to where you want to insert a new end point.

The Amazing Features of the WatchGuard DV-1, WatchGuard Video, [MOTOROLA_004949-MOTOROLA_004958], January 20, 2005 at 1.

> When the car is turned on, the system records two data streams (i.e., high and low bit rate) to the hard drive. It also records metadata. The metadata may include, for example, the status of the brake lights, status of the emergency lights and siren, GPS coordinates, car's speed, data from the interface from the police radar system, etc.... The two resolution streams and the metadata are recorded to the hard drive. The metadata and the streams are times stamped and synchronized.

Vanman at 2.

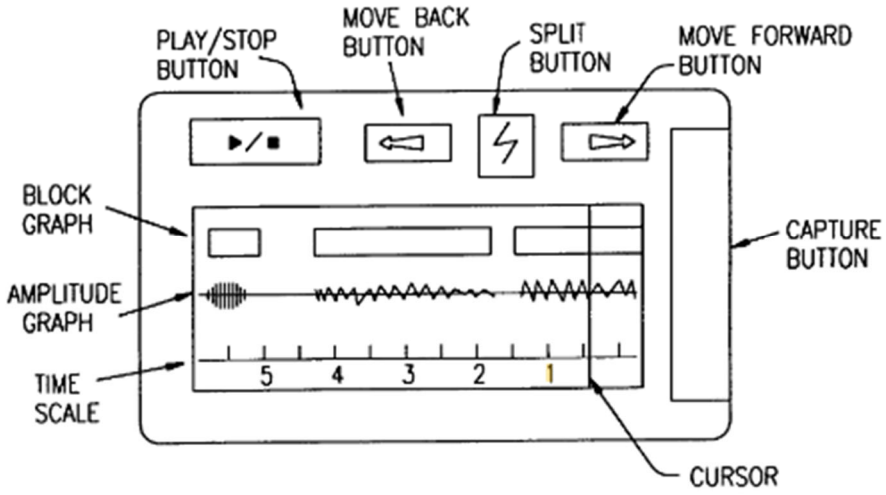
Meta Data Fields Populated in Data Files
GPS Coordinates
GPS Calculated Patrol Speed
VSS Measured Patrol Speed
Radar Measured Patrol Speed
Radar Target Speed
Accelerometers – X, Y, Z Values
Braking Status
Emergency Lights Status
Siren Status
Board Temperature – 98 F
Drive Door Open & Closing Logging
Power Up & Down Logging
DVD Disc Ejection & Insertion Logging

Id. at 25. Therefore, it was known to allow editing of imaged data in a memory loop.

For example, U.S. Pat. No. 5,845,240 ("Fielder '240") discloses "[a] recording method and apparatus enabling a user to select for recall and preservation portions of audio, video or other data that have been continuously recorded on a finite extent of recording medium, thereby enabling the effective recording and reproduction of events that transpired before the decision to record or reproduce them was made." Fielder '240 at Abstract. The Fielder '240 invention is "achieved by recording events on a finite extent of recording medium in a continuous logical loop (i.e., overwriting the earliest recorded data with new data whenever the end of the medium used for this

PATENT OWNER
Ex 2004

continuous recording is reached), and playing back and/or permanently preserving (capturing) portions of the recorded data as selected by the user." *Id*. at 2:49-55. Fielder '240 further describes that "pressing Capture once may capture the most recent minute, pressing it twice in rapid succession may capture the most recent two minutes, and so on." *Id*. at 9:5-8. Additionally, Fielder '240 discloses that "Controls (buttons) are provided for manipulating the cursor, playing back portions of recorded blocks, and capturing blocks." *Id*. at 8:11-13. Figure 3 shows one embodiment of the device:



Id. at Fig. 3.

The "Capture" button "[t]oggles the capture state of the current block (as indicated by the visible cursor)" and "[m]ay be pressed at any time to capture the current block." *Id*. at 8:38-44. Therefore, it was known to allow editing of imaged data in a memory loop.

U.S. Pat. No. 6,804,638 ("Fiedler '638") describes

> A device process for event-activated recording generally includes the steps of providing an acquisition buffer having at least one finite extent of a recording medium. Events are recorded in the acquisition buffer. Current events in place of earlier events are then recorded within the acquisition buffer. Action by the user or triggering system activates the preservation of all or part of the record of the most recent events recorded in the acquisition buffer upon the detection of one or more predetermined events. A portion of the record of events selected by the user is

preserved by reserving a portion of the record of events from being overwritten by other events, and/or by transferring the selected portions of the record of events to a predetermined permanent location.

Fiedler '638 at Abstract.

Fiedler '638 describes "pressing Capture once may capture the most recent minute, pressing it twice in rapid succession may capture the most recent two minutes, and so on." Fiedler '638 at 9:42-45. It also describes that the "Capture" button "[t]oggles the capture state of the current block" and "[m]ay be pressed at any time to capture the current block." *Id*. at 9:5-8.

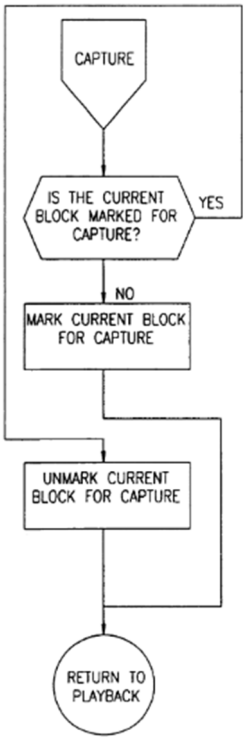


FIG.9

Id. at Fig. 9. Therefore, it was known to allow editing of imaged data in a memory loop.

Additionally, the charted references and products described in Section III.A.1 also disclose allowing editing of imaged data in a memory loop.

d. Motivations to Combine

A hallmark of the *KSR* approach to obviousness is flexibility. *See KSR,* 550 U.S. at 414-18 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court in *KSR* mandated flexibility in at least two respects: first with regard to the proper understanding of the scope of the prior art, and second with regard to appropriate reasons to modify the prior art. In its cases decided since *KSR*, the Federal Circuit has reiterated these two aspects of flexibility. *See, e.g., Intel Corp. v. Qualcomm Inc*., 21 F.4th 784, 795 (Fed. Cir. 2021) (the obviousness analysis is not "confined by a formalistic conception of the words teaching, suggestion, and motivation").

The Supreme Court instructed the Federal Circuit in *KSR* that persons having ordinary skill in the art have common sense, which may be used to glean suggestions from the prior art that go beyond the primary purpose for which that prior art was produced. *Id.*. at 421-22. Thus, the Supreme Court taught that a proper understanding of the prior art extends to all that the art reasonably suggests, and is not limited to its articulated teachings regarding how to solve the particular technological problem with which the art was primarily concerned. *Id*. at 418 ("As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). "The obviousness analysis cannot be confined . . . by overemphasis on the importance of published articles and the explicit content of issued patents." *Id*. at 419; *see also Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (recalling *KSR's* criticism of an overly rigid approach to obviousness that has "little recourse to the knowledge, creativity, and common sense that an ordinarily skilled artisan would have brought to bear when considering combinations or modifications," and discussing the importance of evidence showing "the knowledge and perspective of one of ordinary skill in the art"

PATENT OWNER
Ex 2004

that may provide "critical background information that could easily explain why an ordinarily skilled artisan would have been motivated to combine or modify the cited references to arrive at the claimed inventions").

"Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. The Supreme Court emphasized the principle that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established function." *Id.* at 417. Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 421. The Federal Circuit has also clarified, moreover, that a proposed reason to combine the teachings of prior art disclosures may be proper, even when the problem addressed by the combination might have been more advantageously addressed in another way. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away.") (emphasis in original).

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well together. *See In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art "focus[ed] on the same problem ... c[a]me from the same field of art [and] ... the identified problem found in the two references correspond[ed] well").

PATENT OWNER
Ex 2004

The Supreme Court has further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill . . . ." *Id*. at 417.

Multiple teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine two or more of the prior art references set forth herein come from many sources, including the prior art itself (individual references and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants reserve the right to present expert testimony on, among other things, the teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine any two or more of the prior art references presented in Exhibits A-1 through M-4 and herein. Certain of these rationales are discussed more specifically below. The fact that other rationales are not discussed more specifically should not be interpreted as an admission or concession that the other rationales do not apply.

As further described below, motivations to combine the teachings of the prior art references disclosed herein are found in: (1) the knowledge of persons of ordinary skill in the art, including the express, implied, and inherent teachings of the prior art references themselves as described herein and in Exhibits A-1 through M-4, and the admitted prior art of the Asserted Patents; (2) the fact that the prior art is generally directed towards the same subject matter as the Asserted Patents; (3) market forces and design incentives, including the need to address technical issues and suggest

PATENT OWNER
Ex 2004

similar solutions; and/or the predictable results obtained by applying known techniques to modify existing solutions.

(1) Same Field of Technology

Each of the identified prior art references relate to the field of digital recording technology. The references disclose recording systems using cameras and digital recorders to save events. Many of the references are directed to surveillance systems for law enforcement.

A person of ordinary skill in the art would naturally look to these references, related patents, patent applications, publications, and related commercial products/systems to provide insight into how the industry/field as a whole, inventors, authors, or companies viewed and applied these inventions, teachings, and commercial products/systems. Based on their related disclosures, one of ordinary skill in the art at the time of the invention would have been motivated to apply the teachings from one reference to another in the same way.

(2) Market Forces and Design Incentives Drove Similar Solutions in the Prior Art

Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. Indeed, the need to capture pre-event and post-event video data and to preserve that data was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the prior art references identified herein. Moreover, because there were a finite number of predictable solutions for capturing event data, editing it, and preserving it, a person of ordinary skill in the art had good reason to pursue and/or combine known options and related applications.

(3) Combination of Known Methods/Techniques/Elements Yields Predictable Results

Generally, motivation to combine any of the references for the Asserted Patents with other references exists within the references themselves, as well as within the knowledge of those of

PATENT OWNER
Ex 2004

ordinary skill in the art at the relevant time. Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. The need to provide a way to capture particular event video data and to preserve and edit that data, was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the references identified above.

Moreover, the claimed invention is built upon technology that significantly pre-dates the invention. As the Asserted Patents recognize, it was known to continuously store images in a looping (circular) memory, and upon receiving a trigger signal, protect a portion of the memory. *See e.g.*, '752 patent at 1:35-46. The Asserted Patents also recognize that it was known to preserve data both before and after the trigger signal, for example, 20 seconds before and 10 seconds after the accident. *See e.g.*, *Id*. at 1:30-34. Additionally, it was known to protect the recorded memory until it was offloaded or reset. *See e.g.*, *Id*. at 1:45-46. Finally, it was known for camera users to have the ability to edit an given portion by stopping and replaying the image. *See e.g.*, '540 patent at 1:45-47.

4. Group 3: U.S. Patent No. 8,928,752

a. Exemplary Combinations

The following combinations are merely exemplary and provided as examples of combinations that render the Group 3 Asserted Claim invalid. Defendants' identification of exemplary combinations does not preclude Defendants from identifying other invalidating combinations as discovery progresses and based on, for instance, any changes permitted to Plaintiff's infringement contentions, fact discovery (including that from third parties), claim construction positions taken by Plaintiff, or any order by the court on claim construction.

Exemplary Combinations	USPN 8,928,752 Claim
Chen in view of any of the references discussed and referenced in Section III.B.4.b	1

PATENT OWNER
Ex 2004

Exemplary Combinations	USPN 8,928,752 Claim
Ely in view of any of the references discussed and referenced in Section III.B.4.b	1
Fielder in view of any of the references discussed and referenced in Section III.B.4.b	1
Fiore in view of any of the references discussed and referenced in Section III.B.4.b	1
Kawasaki in view of any of the references discussed and referenced in Section III.B.4.b	1
Kirmuss in view of any of the references discussed and referenced in Section III.B.4.b	1
Lagassey in view of references discussed and referenced in Section III.B.4.b	1
Plante in view of any of the references discussed and referenced in Section III.B.4.b	1
Silvernail in view of any of the references discussed and referenced in Section III.B.4.b	1
Vanman in view of any of the references discussed and referenced in Section III.B.4.b	1
Yerazunis in view of any of the references discussed and referenced in Section III.B.4.b	1

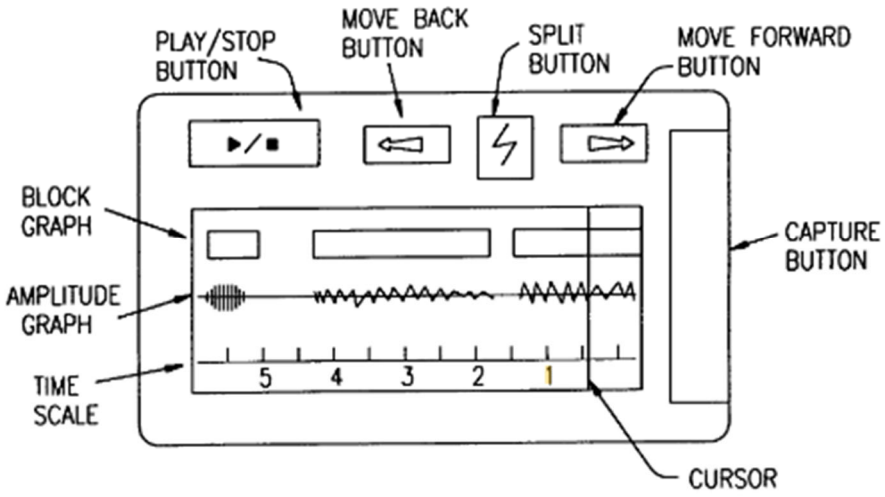
b. References Disclosing Increasing Duration of Protected Segment

As of the earliest priority date for the Group 3 patent, it was known to have a system that "responds to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal." For example, increasing the duration of the pre-event recording allows for the preservation of important data that may have been missed using the default pre-event recording time.

For example, U.S. Pat. No. 5,845,240 ("Fielder '240") discloses "[a] recording method and apparatus enabling a user to select for recall and preservation portions of audio, video or other data that have been continuously recorded on a finite extent of recording medium, thereby enabling the effective recording and reproduction of events that transpired before the decision to record or reproduce them was made." Fielder '240 at Abstract. The Fielder '240 invention is "achieved by recording events on a finite extent of recording medium in a continuous logical loop (i.e.,

PATENT OWNER
Ex 2004

overwriting the earliest recorded data with new data whenever the end of the medium used for this continuous recording is reached), and playing back and/or permanently preserving (capturing) portions of the recorded data as selected by the user." *Id*. at 2:49-55. Fielder '240 further describes that "pressing Capture once may capture the most recent minute, pressing it twice in rapid succession may capture the most recent two minutes, and so on." *Id*. at 9:5-8. Additionally, Fielder '240 discloses that "Controls (buttons) are provided for manipulating the cursor, playing back portions of recorded blocks, and capturing blocks." *Id*. at 8:11-13. Figure 3 shows one embodiment of the device:



Id. at Fig. 3.

The "Capture" button "[t]oggles the capture state of the current block (as indicated by the visible cursor)" and "[m]ay be pressed at any time to capture the current block." *Id*. at 8:38-44.

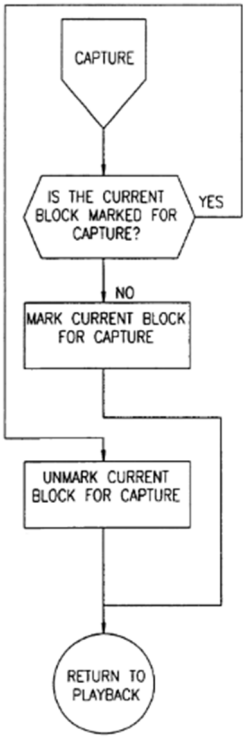


FIG.9

Id. at Fig. 9. Therefore, it was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

U.S. Pat. No. 6,804,638 ("Fiedler '638") describes

> A device process for event-activated recording generally includes the steps of providing an acquisition buffer having at least one finite extent of a recording medium. Events are recorded in the acquisition buffer. Current events in place of earlier events are then recorded within the acquisition buffer. Action by the user or triggering system activates the preservation of all or part of the record of the most recent events recorded in the acquisition buffer upon the detection of one or more predetermined events. A portion of the record of events selected by the user is preserved by reserving a portion of the record of events from being overwritten by other events, and/or by transferring the selected portions of the record of events to a predetermined permanent location.

Fiedler '638 at Abstract.

Fiedler '638 describes "pressing Capture once may capture the most recent minute, pressing it twice in rapid succession may capture the most recent two minutes, and so on." Fiedler '638 at 9:42-45. It also describes that the "Capture" button "[t]oggles the capture state of the

current block" and "[m]ay be pressed at any time to capture the current block." *Id*. at 9:5-8. Therefore, it was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

U.S. Publication No. 2002/0131768 ("Gammenthaler 1") and U.S. Publication No. 2004/0201765 ("Gammenthaler 2") describe an in-car video system with inputs from video cameras. Gammenthaler 1 at Abstract; Gammenthaler 2 at Abstract. Gammenthaler discloses that "the embodiment of FIG. 2 has the additional capability to record after-the-fact events which the officer may have missed because the record mode was not on when the event occurred." Gammenthaler 1 at [0046]; Gammenthaler 2 at [0045]. "This is provided by the use of a hard disk 60 which stores all compressed video and audio data output by the compression process or the optional anti-tampering circuit at all times regardless of whether tape recording mode is on or off." Gammenthaler 1 at [0046]; Gammenthaler 2 at [0045]; *see also*, Gammenthaler 1 at [0056], [0060]; Gammenthaler 2 at [0055], [0059]. "If an officer wants to record to tape all the events that happened in the last 10 minutes or starting from some particular time of day he remembers to be before a significant event, he can give a command via control panel 20 to the system controller 54." Gammenthaler 1 at [0055]; Gammenthaler 2 at [0054]. Therefore, it was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

U.S. Pat. No. 6,167,186 ("Kawasaki") "relates to a video recording device for recording a digitized video image inputted from a camera into a digital storage memory, and more particularly to a video recording device which is capable of retroactively reproducing a video image (event video image) generated when any event occurs while it records a video image monitored in real time." Kawasaki at 1:7-14. "Furthermore, in the video recording device according to the present invention, the recording area correlated with the event signal is defined as a recording area from a

PATENT OWNER
Ex 2004

predetermined time before to a predetermined time after the event signal is inputted." *Id*. at 2:22-26. Kawasaki further discloses that "[t]he event recording time may be changed according to the kind of events in a such a fashion that a long recording time is given to a slowly changing event whereas a short recording time is given to an instantaneous event." *Id*. at 5:15-19. "Further, in the above embodiment, although the block immediately before the event signal occurs has been held as the event video image, the block to be held as the event video image may be further retroactive according to an event circumstance." *Id*. at 5:23-28. Therefore, it was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

U.S. Pat. No. 8,081,214 ("Vanman") "is directed to a video surveillance system, and in particular, by way of example and not limitation, to a Video Surveillance system adapted to be mounted in a law enforcement vehicle for producing a permanent digital evidentiary record…." Vanman at 1:13-19. "A video-data chapter segmentation method includes monitoring for at least one external start trigger, and responsive to detection of at least one of the at least one external start trigger, creating a chapter start point at a point in the video data corresponding to a specified time preceding the at least one detected external start trigger." *Id*. at 1:49-54. "The system is able to automatically include video and audio data that occurred prior to the start of the event period or after the end of an event period by moving event start and end flags based on rules determined by user settings." *Id*. at 11:21-25. "After the recording has been made, if something that was important has occurred, the user can easily go back and set new start and stop flags." *Id*. at 12:11-13. "A section of video may be chosen, whether it was included in the original event or not…." *Id*. at 12: 13-15. "After the fact, a user can choose to grab any video from the hard drive 80 and make new chapters on the DVD." *Id*. at 12:17-18; see also, 12:61-67. "The new chapters can be based on the same event or on multiple events or non-events…." *Id*. at 12:18-20. Therefore, it

PATENT OWNER
Ex 2004

was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

The WatchGuard Video DV-1 Police In-Car DVD-Video Recorder ("DV-1") product similarly included the ability to insert new start flags. For example, "[a]s long as the high bit rate version of the video data has not been overwritten, the operator will be able to go back and retrieve important events from the hard drive data and copy those events to a DVD at the high bit rate." WatchGuard DV-1 Product Specifications, WatchGuard Video, [MOTOROLA_005498-MOTOROLA_005512], November 22, 2003 at 6; *see also*, *Id*. at 3 ("Record After the Fact Functionality"). "The product provides the ability for users (or supervisors) to rewind footage on the hard drive to the point in time of interest, insert a new 'event start marker' and then insert a new 'event stop marker.'" WatchGuard Video DV-1 Product, WatchGuard Video, [MOTOROLA_004959-MOTOROLA_004961], October 6, 2004 at 2. Provisional App. No. 60/617,988 ("Vanman Provisional") similarly discloses implementation details for the DV-1 product regarding the Record After the Fact feature. Vanman Provisional at 13 ("insert a new 'event start marker'"); 15 ("Record-After-the-Fact - Retrieve video events up to a day later that were not initially triggered for recording to DVD"); 57 ("As long as the high bit rate version of the video data has not been overwritten, the operator will be able to go back and retrieve important events from the hard drive data and copy those events to a DVD at the high bit rate."). Therefore, it was known to respond to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

Additionally, the charted references and products described in Section III.A.1 also disclose a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal.

PATENT OWNER
Ex 2004

c. Motivations to Combine

A hallmark of the *KSR* approach to obviousness is flexibility. *See KSR,* 550 U.S. at 414-18 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court in *KSR* mandated flexibility in at least two respects: first with regard to the proper understanding of the scope of the prior art, and second with regard to appropriate reasons to modify the prior art. In its cases decided since *KSR*, the Federal Circuit has reiterated these two aspects of flexibility. *See, e.g., Intel Corp. v. Qualcomm Inc*., 21 F.4th 784, 795 (Fed. Cir. 2021) (the obviousness analysis is not "confined by a formalistic conception of the words teaching, suggestion, and motivation").

The Supreme Court instructed the Federal Circuit in *KSR* that persons having ordinary skill in the art have common sense, which may be used to glean suggestions from the prior art that go beyond the primary purpose for which that prior art was produced. *Id.*. at 421-22. Thus, the Supreme Court taught that a proper understanding of the prior art extends to all that the art reasonably suggests, and is not limited to its articulated teachings regarding how to solve the particular technological problem with which the art was primarily concerned. *Id*. at 418 ("As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). "The obviousness analysis cannot be confined . . . by overemphasis on the importance of published articles and the explicit content of issued patents." *Id*. at 419; *see also Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (recalling *KSR's* criticism of an overly rigid approach to obviousness that has "little recourse to the knowledge, creativity, and common sense that an ordinarily skilled artisan would have brought to bear when considering combinations or modifications," and discussing the importance of evidence showing "the knowledge and perspective of one of ordinary skill in the art"

PATENT OWNER
Ex 2004

that may provide "critical background information that could easily explain why an ordinarily skilled artisan would have been motivated to combine or modify the cited references to arrive at the claimed inventions").

"Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. The Supreme Court emphasized the principle that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established function." *Id.* at 417. Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 421. The Federal Circuit has also clarified, moreover, that a proposed reason to combine the teachings of prior art disclosures may be proper, even when the problem addressed by the combination might have been more advantageously addressed in another way. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away.") (emphasis in original).

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well together. *See In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art "focus[ed] on the same problem ... c[a]me from the same field of art [and] ... the identified problem found in the two references correspond[ed] well").

PATENT OWNER
Ex 2004

The Supreme Court has further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill . . . ." *Id*. at 417.

Multiple teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine two or more of the prior art references set forth herein come from many sources, including the prior art itself (individual references and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants reserve the right to present expert testimony on, among other things, the teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine any two or more of the prior art references presented in Exhibits A-1 through M-4 and herein. Certain of these rationales are discussed more specifically below. The fact that other rationales are not discussed more specifically should not be interpreted as an admission or concession that the other rationales do not apply.

As further described below, motivations to combine the teachings of the prior art references disclosed herein are found in: (1) the knowledge of persons of ordinary skill in the art, including the express, implied, and inherent teachings of the prior art references themselves as described herein and in Exhibits A-1 through M-4, and the admitted prior art of the Asserted Patents; (2) the fact that the prior art is generally directed towards the same subject matter as the Asserted Patents; (3) market forces and design incentives, including the need to address technical issues and suggest

PATENT OWNER
Ex 2004

similar solutions; and/or the predictable results obtained by applying known techniques to modify existing solutions.

(1) Same Field of Technology

Each of the identified prior art references relate to the field of digital recording technology. The references disclose recording systems using cameras and digital recorders to save events. Many of the references are directed to surveillance systems for law enforcement.

A person of ordinary skill in the art would naturally look to these references, related patents, patent applications, publications, and related commercial products/systems to provide insight into how the industry/field as a whole, inventors, authors, or companies viewed and applied these inventions, teachings, and commercial products/systems. Based on their related disclosures, one of ordinary skill in the art at the time of the invention would have been motivated to apply the teachings from one reference to another in the same way.

(2) Market Forces and Design Incentives Drove Similar Solutions in the Prior Art

Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. Indeed, the need to capture pre-event and post-event video data and to preserve that data was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the prior art references identified herein. Moreover, because there were a finite number of predictable solutions for capturing event data, including data from before a triggering event, and preserving it, a person of ordinary skill in the art had good reason to pursue and/or combine known options and related applications.

(3) Combination of Known Methods/Techniques/Elements Yields Predictable Results

PATENT OWNER
Ex 2004

Generally, motivation to combine any of the references for the Asserted Patents with other references exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. The need to provide a way to capture pre-event and post-event video data and to preserve that data, was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the references identified above.

Moreover, the claimed invention is built upon technology that significantly pre-dates the invention. As the Asserted Patents recognize, it was known to continuously store images in a looping (circular) memory, and upon receiving a trigger signal, protect a portion of the memory. *See e.g.*, '752 patent at 1:35-46. The Asserted Patents also recognize that it was known to preserve data both before and after the trigger signal, for example, 20 seconds before and 10 seconds after the accident. *See e.g.*, *Id*. at 1:30-34. Additionally, it was known to protect the recorded memory until it was offloaded or reset. *See e.g.*, *Id*. at 1:45-46. Further, it was known to record multiple events in a circular buffer. *See, e.g.*, Kawasaki at Abstract; Yerazunis at Abstract; Chen at [0022]. It was also known to increase the duration of an event stored in memory. *See, e.g.*, Vanman at 12:61-65; U.S. 2002/0131768 ("Gammenthaler 1") at [0046], [0055], [0060]; U.S. 2004/0201765 ("Gammenthaler 2") at [0045], [0054], [0059]; U.S. Pat. No. 5,845,240 ("Fielder") at 9:5-8.

5. Group 4: U.S. Patent Nos. 10,523,901 And 10,965,910

a. Exemplary Combinations

The following combinations are merely exemplary and provided as examples of combinations that render the Group 4 Asserted Claims invalid. Defendants' identification of exemplary combinations does not preclude Defendants from identifying other invalidating combinations as discovery progresses and based on, for instance, any changes permitted to

PATENT OWNER
Ex 2004

Plaintiff's infringement contentions, fact discovery (including that from third parties), claim construction positions taken by Plaintiff, or any order by the court on claim construction.

Exemplary Combinations	Patent / Claim(s)
Chen in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Ely in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Fielder in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Fiore in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Kawasaki in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Kirmuss in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Lagassey in view of references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Reich in view of references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Vanman in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Yerazunis in view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Chen in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Ely in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Fielder in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Fiore in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Lagassey in view of references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Reich in view of references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Vanman in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e	All Group 4 Asserted Claims

PATENT OWNER
Ex 2004

Exemplary Combinations	Patent / Claim(s)
Chen in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Ely in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Fielder in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Fiore in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Kawasaki in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Kirmuss in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Lagassey in view of references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Reich in view of references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Vanman in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1
Yerazunis in view of any of the references discussed and referenced in Section III.B.2.d/ III.B.2.e in further view of any of the references discussed and referenced in Section III.B.5.b	'901 patent, claim 1s

b. References Disclosing A Pair of Eyeglasses Having a Sensor that Captures Senor Data

As of the earliest priority date for the Group 4 patents, as early as the mid-1980s, cameras mounted on eyeglasses were known in the art. For example, mounting a camera to eyeglasses provides a recording of the field of view of the wearer while allowing hand free operation. *See*, *e.g.*, EP 1064783 at [0014].

PATENT OWNER
Ex 2004

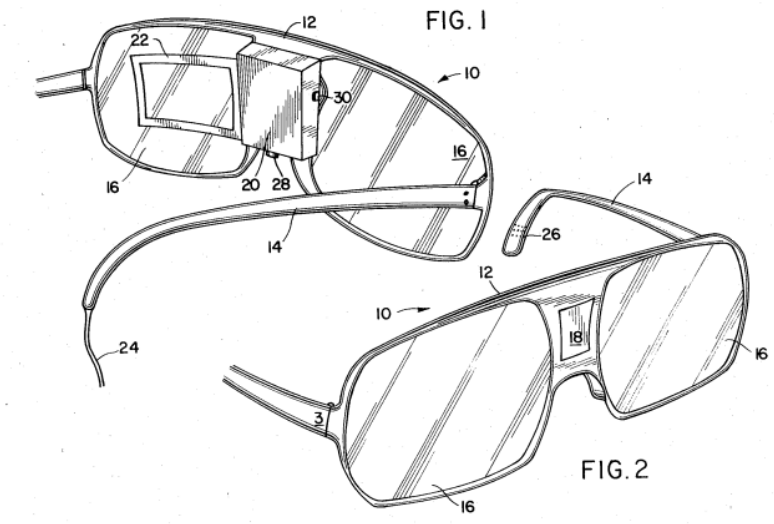
As an example, U.S. 4,516,157 ("Campbell"), issued on May 7, 1985, disclosed a camera mounted on a pair of spectacles for video recording, including "in the security and military fields where concealment is sometimes desirable":

> A video recording device is arranged to be worn by the user like a pair of spectacles. In the recording mode, the scene in front of the user is recorded on a miniature television camera mounted on the spectacle frame (or two cameras if the recording is to be used for 3-D viewing). The miniature camera or cameras may be concealed within the spectacle frame, and allows the user to view the scene normally, and also to examine a view finder showing the portion of the scene available to the television camera. This enables the user to perform hands free photography and provides almost instantaneous recording of a scene as the act of looking at the scene points the camera and the view finder towards that portion of the scene to be captured. The device can be used to record moving pictures or still pictures as in an electronic still camera.

Campbell at Abstract.

> FIGS. 1 and 2 illustrate a video device 10 of the present invention. The device includes a pair of spectacles 12 with sideframes 14 and spectacle lenses 16. Between the spectacle lenses is a further lens 18, behind which is a miniature camera 20, typically a CCD device.

Id. at 2:47-51.



Id. at Figs. 1, 2.

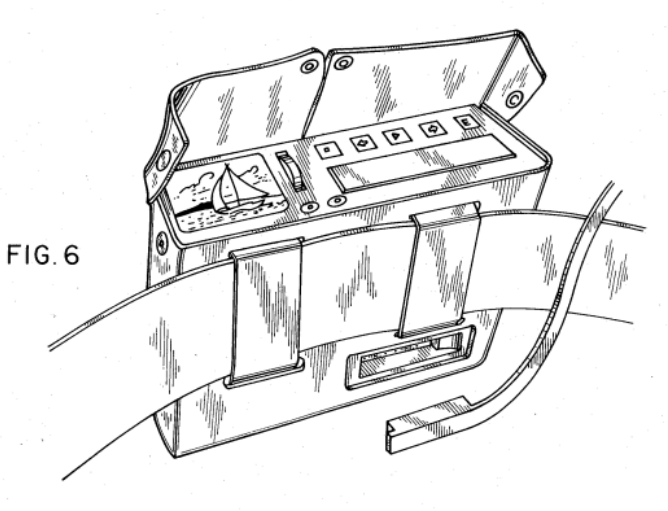
> FIGS. 3 and 4 illustrate a second video device or camera unit 40 of the present invention. This device is similar to the device 10 of FIGS. 1 and 2, except that

instead of a single mid-mounted camera there are two cameras 42, one adjacent each hinge 44 of a pair of spectacles 46. Each individual camera comprises a CCD chip 48 capable of receiving light and producing an electronic signal responsive to the image received by the charge-coupled optical device. The chip 48 is mounted behind a single element lens 50, typically a 16 millimeter F.2 wide angle lens, and a mirror 52.

Id. at 3:49-59.

It is preferred that the video camera be connected to a recorder mounted on the user's person, and it is particularly preferred that the recorder be mounted on a belt, in such a manner as to be concealed, as shown in FIG. 6. The bulk of the recorder can be broken into two components for ease of wearing. For example, the batteries and camera circuitry can be provided in a separate container. The recorder can utilize a moving magnetic tape as presently used on video cameras, although it will be appreciated that the recording medium can be any other means of storing a signal from the CCD, including magnetic discs, digital electronic memories such as magnetic bubble memories, or other electronic memories.

Id. at 4:42-55.



Id. at Fig. 6.

The means for transmitting picture information may involve a cable connecting the portable camera to an appropriate recorder, as shown, or may include an optical wave guide, or a radio, ultrasonic or other transmitter.

By this means the video receptor on the spectacles need not be directly coupled to the recorder or monitor of the signal.

For example, the spectacles may have a transmission device associated with it to transmit a signal containing picture information to a recorder mounted on the person's body, such as on a belt, or near him, as in a storage case in the same or adjacent room. For short distance transmission, it would be possible to use a

PATENT OWNER
Ex 2004

> relatively small transmitter transmitting picture information by a small radio transmitter, or ultrasonic or other sound emitter. The size and type of transmitter will depend upon the amount of picture information required to be transmitted. For example, in the case of an electronic still camera, there may be a small buffer memory associated with the portable camera which stores the information from a particular frame, and then transmits this information at a somewhat slower rate than the information is received in the buffer memory. This would enable a transmitter to use a smaller band width than a transmitter involved in transmitting live motion pictures. As it is possible to generate the picture information as a series of binary digits, it is possible to transmit the information as a series of on-off sound or radio pulses. Alternatively, an analogue signal can be used to transmit the information to the appropriate receiver.
>
> In another example, the transmitter associated with the portable camera could transmit greater distances, or involve the used of a booster or relay transmitter close to the user. In either event, this could be transmitted to a distant receiver, or a monitor, or via a modem to a telephone line or via a satellite, or any other transmission device, to a distant receiver. The receiver at any point along the transmission chain could have an appropriate recorder associated with it to store the picture information, or the information could be processed live via a monitor as might be the case with live news TV broadcasts.
>
> It will thus be appreciated that by transmitting the signal from the video receptor via any suitable transmitter to a receiver, it is possible to operate the portable camera in a relatively free and easy manner without being encumbered by wires or cables. Moreover, this enables the user more readily to conceal the presence of the camera and to record information received by the camera, as he will be able to record the scene he is looking at.

Id. at 5:1-55.

> It will be appreciated that the concept of this invention involving the mounting of an electronic lens and a view finder on glasses, goggles or other spectacles, has a wide range of uses. Ordinary recording of a video tape or electronic still pictures can be carried out with a minimum of fuss and without encumbering the hands. This makes it possible to operate the camera while skiing, driving, flying, and so on. The invention also lends itself to the provision of do-it-yourself video training tapes. For example, an instructor could create a video tape of his own actions and instructions, so that a student watching the video would have the sensation of actually being there carrying out the instructor's actions. Other applications are in the industrial field, in providing training films, and in providing on-the-spot recording, as a camera for handicapped persons, and in the security and military fields where concealment is sometimes desirable.

Id. at 6:3-20. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

PATENT OWNER
Ex 2004

Also in the security or law enforcement context, U.S. Patent No. 6,624,611 ("Kirmuss") disclosed a "wireless camera" that could be "patently or covertly mounted on the officer" in a law enforcement situation:

> A second microphone 340 is carried by the patrolman 302 in FIG. 3B to receive, transmit 342, and record any conversations that the officer has outside a vehicle. Optionally, a wireless camera 350 is patently or covertly mounted on the officer or carried as a hand-held unit designed to document a crime scene. The wireless unit transmits two or more real-time video signals 352 back to system 200 located in the patrol car.

Id. at 23:9-17.

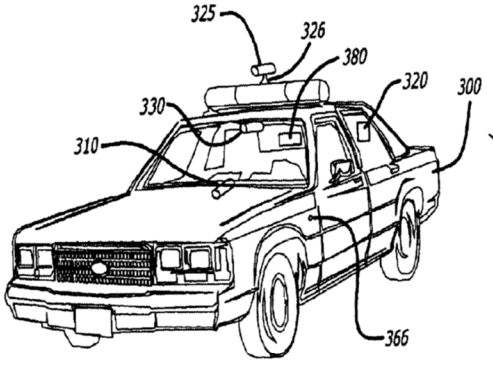


FIG. 3A

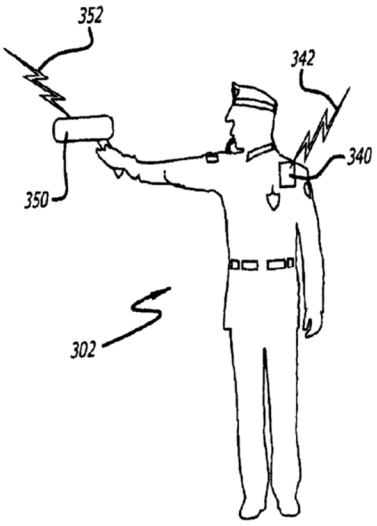


FIG. 3B

Id. at Figs. 3A, 3B.

> Mobile Scene "Photography". To aid the scene investigations of accidents, hazardous materials spills, and the like, an embodiment of the present invention is used to replace unauthenticated JPEG still digital video cameras, allowing the device to act as a remote authenticated digital video storage device. To accomplish this, a wireless video transmitter is connected to a portable DC camera. Whether connected with or without a small LCD monitor, this embodiment links a wireless camera with optional audio to transmit video and/or audio signals up to 800 feet or more back to the housing installed in a vehicle or base station. Recorded live video scenes may be played back, and authenticated video stills may be then reproduced

> for distribution, whether in the field or at a main data collection station. To ensure that the video and/or audio data has been successfully received at the recorder location, the received video/audio data (or a hash thereof) may be sent back to the remote transmission device.

Id. at 27:21-38. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

The '901 patent specification admits that eyeglasses cameras were already known in the art: "EP 1064783 to Mann describes a camera mountable to a pair of eyeglasses that continuously saves recorded images to a circular buffer in a computer on the user's waist. Mann also discusses streaming the images directly to a wireless memory that may have a larger capacity; however, this means that the camera does not work in the absence of a wireless connection." '901 patent at 2:1-9.

> Indeed, EP 1064783 ("Mann"), WO99/049656, discloses the following:
>
> It is an object of this invention to provide a method of positioning a camera in which both hands may be left free.
>
> It is a further object of this invention to provide a means of exposing a film or acquiring a picture electronically where the spatial extent (field of view) of the image may be ascertained without having to hold any device up to the eye.
>
> What is described is a wearable camera and viewfinder for capturing video of exceptionally high compositional and artistic caliber. In addition to the fact that covert versions of the apparatus can be used to create investigative documentary videos having very good composition, for everyday usage the device need not necessarily be covert. In fact, it may be manufactured as a fashionable device that serves as both a visible crime deterrent, as well as a self-explanatory (through its overt obviousness) tool for documentary videomakers and photojournalists.
>
> Another feature of the invention is that the wearable camera has a viewfinder such that the image may be presented in a natural manner suitable for long-term usage patterns.
>
> There are several reasons why it might be desired to wear the camera over a sustained period of time:
>
> 1. There is the notion of a personal visual diary of sorts.

PATENT OWNER
Ex 2004

2. There is the idea of being always ready. By constantly recording into a circular buffer, a retroactive record function, such as a button that instructs the device to "begin recording from five minutes ago" may be useful in personal safety (crime reduction) as well as in ordinary everyday usage, such as capturing a baby's first steps on video. With the prior art in photography and video, we spend so much time preparing the camera and searching for film, batteries, etc., or at the very least, just getting the camera out of its carrying case, that we often miss important moments like a baby's first steps, or a spontaneous facial expression during the opening of a gift.

3. There is the fact that the wearable camera system, after being worn for a long period of time, begins to behave as a true extension of the wearer's mind and body. As a result, the composition of video shot with the device is often impeccable without even the need for conscious thought or effort on the part of the user. Also, one can engage in other activities, and one is able to record the experience without the need to be encumbered by a camera, or even the need to remain aware, at a conscious level, of the camera's (*sic*)existance. This lack of the need for conscious thought or effort suggests a new genre of documentary video characterized by long-term psychophysical adaptation to the device. The result is a very natural first-person perspective documentary, whose artistic style is very much as if a recording could be made from a video tap of the optic nerve of the eye itself. Events that may be so recorded include involvement in activities such as horseback riding, climbing up a rope, or the like, that cannot normally be well recorded from a first-person perspective using cameras of the prior art. Moreover, a very natural first-person perspective genre of video results. For example, while wearing an embodiment of the invention, it is possible to look through the eyepiece of a telescope or microscope and record this experience, including the approach toward the eyepiece. The experience is recorded, from the perspective of the participant.

Id. at 4:7-5:21.

One aspect of the invention allows a photographer or videographer to wear the apparatus continuously and therefore always end up with the ability to produce a picture from something that was seen a couple of minutes ago. This may be useful to everyone in the sense that we may not want to miss a great photo opportunity, and often great photo opportunities only become known to us after we have had time to think about something we previously saw.

Id. at 9:23-31.

FIG. 1 is a diagram of a simple embodiment of the invention in which there are two cameras, a wide-angle camera concealed in the nose bridge of a pair of sunglasses, a tele-camera concealed in the top part of the frame of the sunglasses, and combined by way of a beamsplitter with the wide-camera, as well as a viewfinder means concealed in the left temple side-piece of the glasses with optics concealed in or behind the glass of the left lens.

PATENT OWNER
Ex 2004

Id. at 11:28-36.

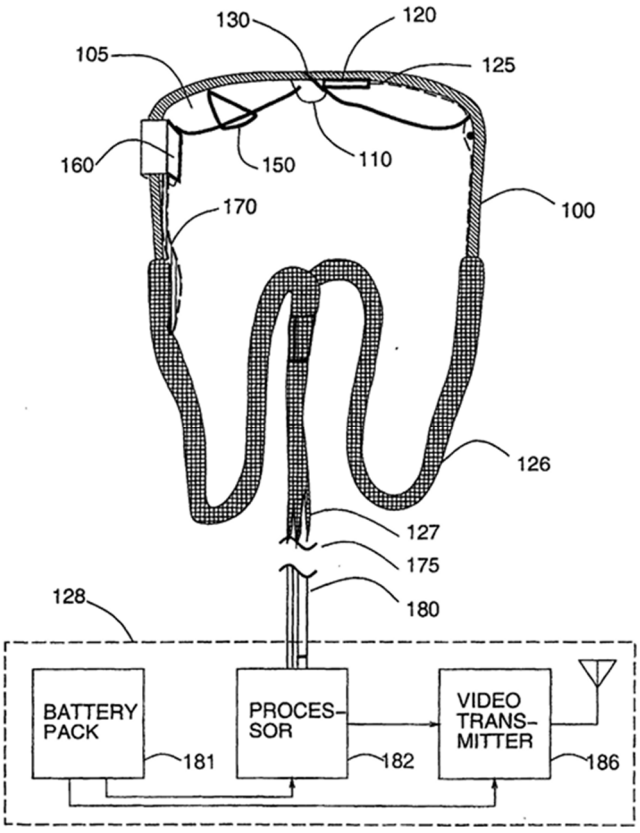


FIG. 1 – FOVEATED EMBODIMENT OF WEARABLE CAMERA SYSTEM

Id. at Fig. 1.

> The term "headgear" shall include helmets, baseball caps, eyeglasses, and any other means of affixing an object to the head, and shall also include implants, whether these implants be apparatus imbedded inside the skull, inserted into the back of the brain, or simply attached to the outside of the head by way of registration pins implanted into the skull. Thus "headgear" refers to any object on, around, upon, or in the head, in whole or in part.

Id. at 13:43-51.

> FIG. 1 shows an embodiment of the invention built into eyeglass frames 100, typically containing two eyeglass lenses 105. An electronic wide-angle camera 110 is typically concealed within the nose bridge of the eyeglass frames 100. In what follows, the wide-angle camera 110 may be simply referred to as the "wide-camera". or as "wide-angle camera". In this embodiment of the wearable camera, a second camera, 120, is also concealed in the eyeglass frames 100. This second camera is one which has been fitted with a lens of longer focal length, and will be referred to as a "narrow-angle camera", or simply a "narrow-camera" in what follows. The

wide-camera 110 faces forward looking through a beamsplitter 130. The narrow-camera 120 faces sideways looking through the beamsplitter. For clarity, the beamsplitter 130 and camera 110 are shown separated in FIG. 1a, while in actual construction, the beamsplitter is cemented between the two cameras as shown in FIG. 1. The beamsplitter 130 is typically mounted at a 45 degree angle, and the optical axes of the two cameras are typically at 90 degree angles to each other. The optical axes of the two cameras should intersect and thus share a common viewpoint. Thus the narrow camera 120 may have exactly the same field of view as the wide-camera 110. Typically eyeglasses with black frames are selected, and a CCI) sensor array for wide-camera 110 is concealed in a cavity which is also used as a nose bridge support, so that the eyeglasses have a normal appearance. Typically, the body of the wide-camera is formed from epoxy, which sets it permanently in good register with the beamsplitter and the narrow-camera 120. During setting of the epoxy, the cameras are manipulated into an exact position, to ensure exact collinearity of the two effective optical axes. The wide-camera 110 is typically fitted with a lens having a diameter of approximately {fraction (1/32)} inch (less than one millimeter) —small enough that it cannot be easily seen by someone at close conversational distance to the person wearing the eyeglasses. The narrow-camera 120 is typically concealed in the upper portion of the eyeglass frames. The narrow-camera 120 is preferably custom-made, like the wide-camera, by encapsulating a CCD sensor array, or the like, in an epoxy housing together with the appropriate lens, so that cameras 110 and 120 are both bonded to beamsplitter 130, and all three are in turn bonded to the eyeglass frame. A satisfactory narrow-camera, for use in small-production runs of the invention (where it is difficult to construct the housing from epoxy) is an Elmo QN42H camera, owing to its long and very slender (7 mm diameter) construction. In mass-production, a custom-made narrow-camera could be built directly into the eyeglass frames. Since the narrow-camera 120 is typically built into the top of the eyeglass frames, the wide-camera 110 should also be mounted near the top of the frames, so the two optical axes can be made to intersect at right angles, making the effective optical axes (e.g. that of camera 120 as reflected in beamsplitter 130) collinear.

Id. at 13:56-14:55.

Preferably, a complete camera system providing NTSC video is not installed directly in the eyeglasses. Instead, wires 125 from the camera sensor arrays are concealed inside the eyeglass frames and run inside a hollow eyeglass safety strap 126, such as the safety strap that is sold under the traders “Croakies”. Eyeglass safety strap 126 typically extends to a long cloth-wrapped cable harness 180 and, when worn inside a shirt, has the appearance of an ordinary eyeglass safety strap, which ordinarily would hang down into the back of the wearer’s shirt. Wires 125 are run down to a belt pack or to a body-worn pack 128, often comprising a computer as part of processor 182, powered by battery pack 181 which also powers the portions of the camera and display system located in the headgear. The processor 182, if it includes a computer, preferably contains also a nonvolatile storage device or network connection. Alternatively, or in addition to the connection to processor 182, there is often another kind of recording device, or

PATENT OWNER
Ex 2004

connection to a transmitting device 186. The transmitter 186, if present, is typically powered by the same battery pack 181 that powers the processor. In some embodiments, a minimal amount of circuitry may be concealed in the eyeglass frames so that the wires 125 may be driven with a buffered signal in order to reduce signal loss.

Id. at 14:56-15:34.

Suppose the wearer is in a department store and, after picking up a $7 item for purchase, the wearer approaches the cashier, hands the cashier a $20 dollar bill, but only receives change for a $10 bill (e.g. only receives $3 change from $20). Upon realizing this fact a minute or so later, the wearer locates a fresh available, (e.g. one that has no programs running in it so that it can accept commands) xterm 196…. Recording is typically retroactive, in the sense that the wearable camera system, by default, always records into a 5 minute circular buffer, so that pressing "d" begins recording starting from 5 minutes ago, e.g. starting from 5 minutes before "d" is pressed. This means that if the wearer presses "d" within a couple of minutes of realizing that the cashier short-changed the wearer, then the transaction will have been (*sic*)sucessfully recorded. The customer can then see hack into the past 5 minutes, and can assert with confidence (through perfect photogiaphic/videographic memory Recall, e.g. by pressing "r") to the cashier that a $20 bill was given. The extra degree of personal confidence afforded by the invention typically makes it unnecessary to actually present the video record (e.g. to a supervisor) in order to correct the situation. Of course. if there was a belief that the cashier was dishonest, the customer could file a report or notify authorities while at the same time submitting the recording as evidence. Typically the recording is also transmitted by way of transmitter 186 so that the cashier or other representatives of the department store (such as a department store security guard who might be a close personal friend of the cashier) cannot (*sic*)sieze and destroy the storage medium upon which the recording was made.

Id. at 18:5-19:17.

The apparatus of this invention allows the wearer to experience the camera over a long period of time. For example, after wearing the apparatus sixteen hours per day for several weeks, it begins to function as a true extension of the mind and body. In this way, photographic composition is much more optimal, because the act of taking pictures or shooting video no longer requires conscious thought or effort. Moreover, the intentionally of the picture-taking process is not evident to others, because picture-taking is not (*sic*)preceeded by a gesture such as holding a viewfinder object up to the eye. The wearable viewfinder is an important element of the wearable camera invention allowing the wearer to experience everyday life through a screen, and therefore be always ready to capture anything that might happen, or even anything that might have happened previously by virtue of the retroactive record capability of the invention. Moreover, additional information beyond just exposure and shutter speed may be displayed in the camera viewfinder. For example., the camera allows the wearer to augment, diminish, or otherwise alter his or her

PATENT OWNER
Ex 2004

> perception of visual reality. This mediated-reality experience may be shared. The wearer may allow others to alter his or her perception of reality. In this way the invention is useful as a new communications medium, in the context of collaborative photography, collaborative videography, and telepresence. Moreover, the invention may perform other useful tasks such as functioning as a personal safety device arid crime deterrent by virtue of its ability to maintain a video dairy transmitted and recorded at multiple remote locations. As a tool for photojournalists and reporters, the invention has clear advantages over other competing technologies.

Id. at 32:49-33:23. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent No. 6,614,408 ("Mann") further disclosed: "Typically embodiments of the invention allow a photojournalist to wear the apparatus continuously and therefore always end up with the ability to produce a picture from something that was seen a couple of minutes ago, through a retroactive record function into a circular buffer." Mann at 5:56-61. "For example, a 'begin recording from 5 minutes ago' button works well if the apparatus is always worn and always ready." *Id*. at 5:61-63.

> The acquisition, storage, or transmission of images may also be governed by attributes of eye 200. For example, when the pupil of eye 200 is dilated more than it would normally be for a given light level, pictures can be taken more rapidly, or picture capture can be initiated when none would normally be initiated, or a circular buffer can be stopped, dumped to storage, or transmitted.

Id. at 12:50-56. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

Additionally, a published article in 1998 by Steve Mann, "'WearCam' (The wearable camera): personal imaging systems for long-term use in wearable tetherless computer-mediated reality and personal photo/videographic memory prosthesis," from the Digest of Papers, Second International Symposium on Wearable Computers (Cat. No. 98EX215). IEEE, [MOTOROLA_007565-MOTOROLA_007572] 1998, disclosed:

PATENT OWNER
Ex 2004

1.1 Always ready. There are various reasons why it might be desired to wear a personal imaging system over a sustained period of time:

***

2. There is the very simple capability of being always ready to take a picture. By constantly recording into a circular buffer, a retroactive record function, such as a button that instructs the device to "begin recording from five minutes ago" may be useful in personal safety (crime reduction) as well as in ordinary everyday usage, such as capturing a baby's first steps on video. With other prior methods in photography and video, we spend so much time preparing the camera and searching for film, batteries, etc., or at the very least, just getting the camera out of its carrying case, that we often miss important moments like a baby's first steps, or a spontaneous facial expression during the opening of a gift.

***

It is the author's view that such an apparatus is of most benefit when it is worn over a long period of time, so that, as a computational framework, it leads to a constancy of user–interface. In order for there to be widespread acceptance of this apparatus, it should have the appearance of ordinary eyewear. Thus the components of the system should be concealed within ordinary eyewear, or concealable by the clothing and hair of a typical user. Thus the apparatus may take the form of ordinary eyeglasses or ordinary sunglasses. Dark or mirrored sunglasses may also help conceal intricate and sophisticated imaging and display systems.

PATENT OWNER
Ex 2004

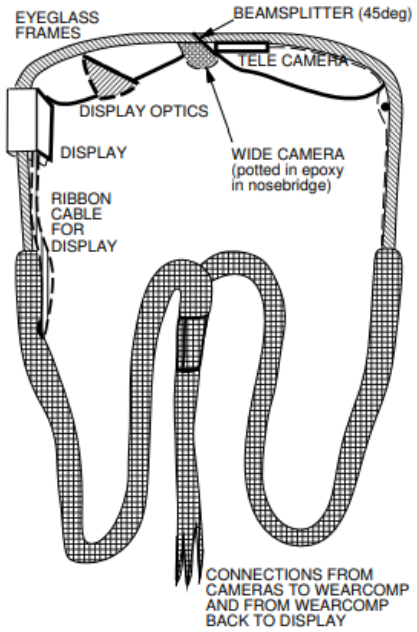


Figure 1: Early covert personal imaging system with foveated camera comprising a wide–camera potted in epoxy, concealed in the nosebridge of the glasses, and a tele–camera aimed at right angles to the optical axis of the wide–camera. A beam splitter provided a unified center of projection. The wide–camera was in landscape orientation and used by the wearable computer for head–tracking, while the tele–camera was in portrait orientation, and presented on the viewfinder visible to the left eye.

Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

Additionally, U.S. 2004/0033058 ("Reich") disclosed a video camera to be attached to a pair of glasses, including for law enforcement or security applications:

> [0003] Today's society has become increasingly video-oriented. Video equipment finds numerous applications in security, law enforcement, legal proceedings, news reporting, scientific studies, entertainment, family videos and the like. Despite the ubiquity of video equipment, there are often instances when an event occurs that is not captured by video simply because the equipment was not set up in the right position, was not ready to record or simply was not present. Many priceless opportunities to record important or interesting events are thus missed and never to be seen on video.
>
> [0007] The above and other problems of the prior art are overcome in accordance with the present invention which relates to a device, system and method that monitors images and sounds and permits capture of unrecorded events for a particular period of time, such as the last 0-30 seconds or more "seen" by the camera, and is able to record that video to a removable media.
>
> [0008] In one embodiment the device automatically switches from a monitoring mode, wherein the last 30 seconds or so "seen" by the camera can be and is captured

PATENT OWNER
Ex 2004

to memory, to a direct real time record mode if no further action is taken by the user, e.g., the "stop" button is pressed. In a preferred embodiment the device is adaptable to be attached to headgear such as but not limited to a pair of glasses or the bill of a cap and transmits the video to a remote device such as a hip pack where the video is recorded. In a preferred embodiment an LCD screen is incorporated in the remote device and continuous recording capability to a compact flash card is provided.

[0009] In a preferred embodiment a digital camera is employed and a wireless connection is provided.

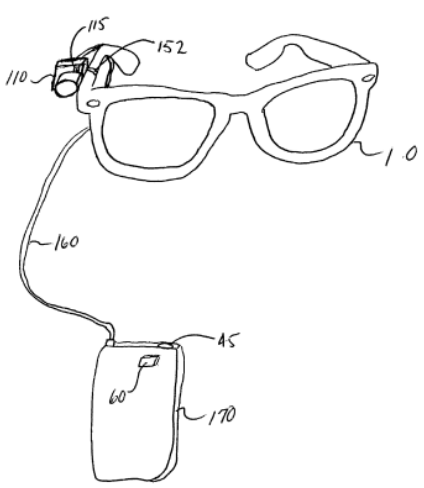


FIG. 5

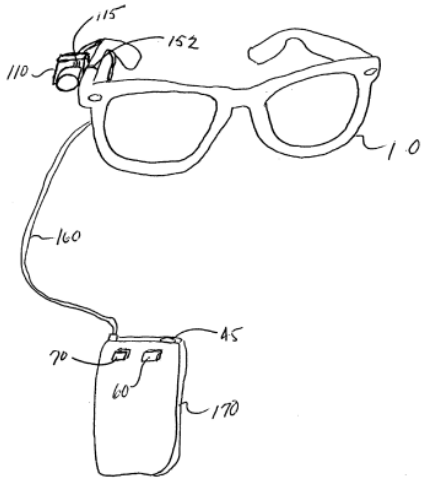


FIG. 6

[0029] Now referring to FIG. 5 in a preferred embodiment device 2 comprises camera 110 mounted on glasses 150 by attachment means such as but not limited to clip 152 (or to other means such as a cap, hap, hair clip, comb or the like, to be near the eyes of a user to most advantageously permit the device to "see" what it is the user sees) connected via cable 160 to remote unit 170. Camera 110 further comprises microphone 115. Remote unit 170 may comprise an attachment means (not shown) such as a clip for attachment to a belt loop, shirt pocket, backpack or the like. In a preferred embodiment device 2 captures the last 0-30-second or more of what the user of the device 2 just viewed and heard when user presses the appropriate button 60 on the remote unit 170. Device 2 can record multiple 30 second captures based upon the size of the external flash memory 120. In a preferred embodiment the video stored on the removable media is in a format that can be viewed and heard via media players such as Windows Media Player or Real One Media Player. The device in a preferred embodiment provides video quality minimum of 30 frames per second; video quality meets CIF standards with frames at 320×240 pixels. Audio is preferably mono. In a further embodiment device 2

PATENT OWNER
Ex 2004

> further comprises an indicator light 45 to inform the user when there is insufficient storage left on the compact flash card to store another 0-30-second or more image.
>
> [0030] Camera 110 may take any form and may be adapted to be permanently attached to headgear. In addition, camera 110 and remote device may comprise a unitary device 170 that may be attached to any headgear including but not limited to glasses 150.
>
> [0031] Now referring to FIG. 6 in a most preferred embodiment device 2 comprises camera 110 mounted on glasses 150 connected to remote unit 170 via cable 160. Device 2 comprises record button 60 that when activated causes device 2 to capture the last 0-30-second or more of what the user of the device 2 just viewed and heard. Device 2 further comprises mode button 70. Device 2 is adapted to automatically switch from a monitoring mode wherein the last 30 seconds or so monitored by the camera can be and is captured to memory, to a direct real time record mode if no further action is taken by the user, e.g., mode button 70 is activated. When activated, the proprietary software according to FIG. 4 hereinabove enables the camera to continuously monitor what the camera wearer is seeing. In order to permanently record audio and video, the user activates record button 60 and triggers the software to save the previous 30 seconds of monitored video and audio to flash memory. If mode button 70 is not activated, no stop command is given and the camera continues recording in real time. The invention is preferably adapted to store at least 100 clips of video and audio. In a most preferred embodiment the recording function of the camera is disabled while the camera is capturing and compressing the previous 30 seconds.

Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

A published article in October 2004 described another camera wearable on eyeglasses, referred to as the Deja View Camwear 100 (CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 110-111, published October 15, 2004, New York, New York, ACM Press [MOTOROLA_006589-MOTOROLA_006590]):

PATENT OWNER
Ex 2004

5. Product Audience

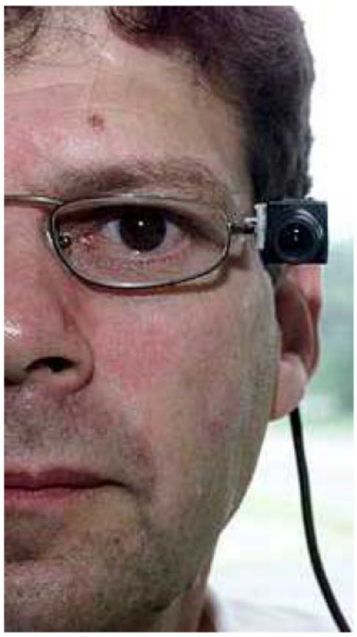
The Camwear 100 with its "after-the-fact" technology is ideally suited to a variety of applications, including recreation and leisure, travel and tourism, business, education, government, military, law enforcement, medical research and many others where it is important to keep visual documentation of activity. Aimed primarily at the consumer, the product's typical usage would be by parents attempting to capture the precious moments of their son or daughter at such milestone events as school promotions and graduations, Little League or other sports action, weddings, etc.

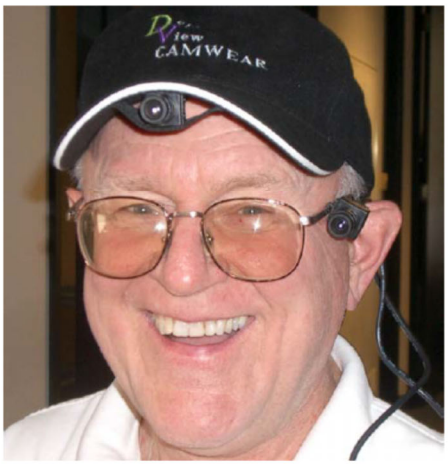
6. Pricing

The Camwear Model 100 is priced at $399.99 MSRP

7. Distribution

The Camwear 100 will be available through the Deja View website at www.mydejaview.com , and through a network of consumer electronics chain stores, camera stores and major online resellers.







Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

Another published article from the same CARPE proceedings published in October 2004 described a personal video recording system mounted on a pair of glasses called "ECSGlasses" (Augmenting and Sharing Memory with eyeBlog, CARPE '04: Proceedings of the 1st ACM Workshop on Continuous Archival and Retrieval of Personal Experiences, pages 105-109, published October 15, 2004, New York, New York, ACM Press) [MOTOROLA_006598-MOTOROLA_006602] ("ESCGlasses"):

> eyeBlog is an automatic personal video recording and publishing system. It consists of ECSGlasses [1], which are a pair of glasses augmented with a wireless

PATENT OWNER
Ex 2004

eye contact and glyph sensing camera, and a web application that visualizes the video from the ECSGlasses camera as chronologically delineated blog entries. The blog format allows for easy annotation, grading, cataloging and searching of video segments by the wearer or anyone else with internet access. eyeBlog reduces the editing effort of video bloggers by recording video only when something of interest is registered by the camera. Interest is determined by a combination of independent methods. For example, recording can automatically be triggered upon detection of eye contact towards the wearer of the glasses, allowing all face-to-face interactions to be recorded. Recording can also be triggered by the detection of image patterns such as glyphs in the frame of the camera. This allows the wearer to record their interactions with any object that has an associated unique marker. Finally, by pressing a button the user can manually initiate recording.

ESCGlasses at pg. 105.

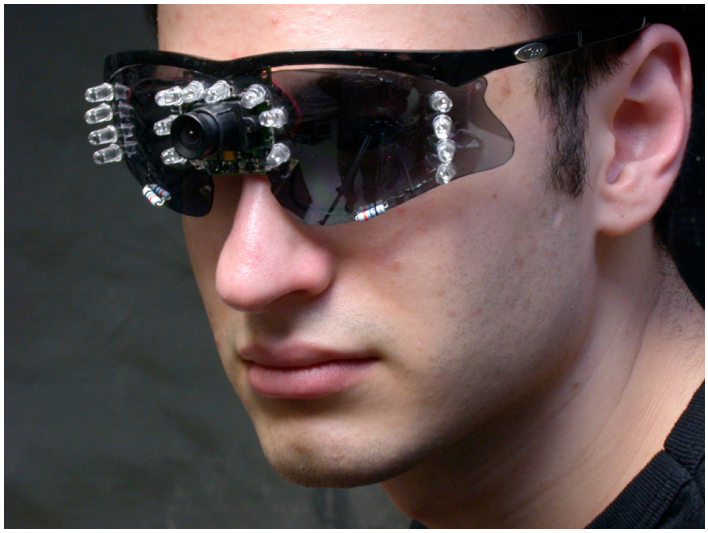


Figure 2. ECSGlasses: camera with LED illuminators

EyeTap [6] is an illustration of a device that satisfies these properties. EyeTap are a pair of glasses that allow the user to continuously capture and record information. To record, the device employs a circular buffer system such that the last 10 minutes of video is retained. This enables the user to review the last 10 minutes of their life, allowing them to manually save the most memorable moments throughout the day.

By mounting the camera on a glasses-like headset Mann's EyeTap avoids visible parallax. This allows video to be recorded from a first-person perspective while an associated wearable computer streams video content to the web.

ECSGlasses are a novel wearable camera system that allows a user to record video from a first person perspective upon detection of eye contact at the wearer. This allows the wearer to pay attention to the event at hand, rather than the device being used to record it. The associated recording software, running on a remote computer, uses the information from the ECSGlasses to start and stop recording. Recorded

PATENT OWNER
Ex 2004

> video segments are then appropriately compressed and filed for web publishing. Publishing is handled by an Apache web server and a modified installation of the Moveable Type blogging software and a proprietary Perl script called eyeBlogScript. This allows anyone with Internet access to annotate, grade, catalogue and search the video blog archive.
>
> ECSGlasses
>
> Eye-Contact Sensing (ECS) Glasses are a novel type of wearable input device for detecting the looking behavior of other people without any discernible parallax [1]. They are also capable of recognizing other image patterns such as glyphs. ECSGlasses consist of a standard pair of sunglasses, augmented with an eye-contact sensing camera[1]. We have developed both clear and dark glass versions, the latter is shown in figure 2.

Id. at pg. 106. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent No. 8,482,488 ("Jannard"), filed: 12/22/2004, published 6/22/2006, and assigned to Oakley, disclosed "electronically enabled eyeglasses" including " a camera for recording video for playback:

> In general, the data input management system in accordance with the present invention enables the user to select one or more data sources to be placed either simultaneously or one at a time into electrical communication with a single user interface. The interface may comprise any of a variety of physical forms, including electronically enabled eyeglasses.

Jannard at 1:65-2:3.

> In further embodiments, the source electronics may include a video source, or an audio/video source. For example, in one embodiment, the source includes a camera for real time viewing of a remote location or viewing direction, or a video playback device such as a DVD or VCR or solid state video storage device.

Id. at 24:63-25:1.

> In one embodiment, the wearable electronic interface 601 is electronically enabled eyewear including audio, video or audio-video interface capabilities such as described in greater detail elsewhere herein. However, wearable electronic interface 601 may be any wearable device, and may be in the form of any wearable support structure, including a wristwatch, armband, jewelry, headwear and clothing. Examples of such wearable electronic interface 601 clothing include head phones,

PATENT OWNER
Ex 2004

> earphones, a hat, helmet, goggles, mask, visor, head band, hair band, shirt, scarf, sweater, jacket, belt, pants, vest, etc.

Id. at 25:38-48.

> The video input 618 of the wearable electronic interface 601 includes any device suitable for converting an image, or visual information into an electronic signal that can be processed or carried by the wearable electronic interface 601. For example, in one embodiment, the video input 618 includes a camera, a still camera, or a video camera. See generally U.S. Pat. No. 6,349,001 to Spitzer, entitled Eyeglass Interface System, the disclosure of which is incorporated in its entirety herein by reference.

Id. at 26:62-27:3. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent No. 6,563,532 ("Strub") disclosed a camera located "on the side of a pair of eyeglasses":

> The invention enables "low attention recording," i.e., recording that need not appreciably affect interaction of a recorder (i.e., a person in control of a recording unit according to the invention) or others with the environment in which the recording is taking place. The low attention recording enabled by the invention can be particularly advantageously employed in "social recording," i.e., recording in which multiple participants in an event are recording the event. As described in more detail below, advantageous aspects of the invention can be provided by a small, lightweight, wearable recording unit. In particular, a recording unit according to the invention is particularly adapted to enable use of the recording unit to record an event during which the recorder engages in vigorous physical activity (e.g., an athletic activity, such as hiking, snow skiing or ping pong). The recording unit is constructed with a particular emphasis on the wearability characteristics of the recording unit, in order to facilitate freedom of movement by the recorder and minimize distraction to, or encumbrance of, the recorder's participation in the activity.

Strub at Abstract.

> The location on the recorder at which the visual data acquisition device is mounted can also be affected by consideration of the desired characteristics of the point of view of the visual recording. In this vein, the height of the visual data acquisition device and the direction in which the visual data acquisition device records must be considered. For example, it is anticipated that it will often be desirable to record from a height at or above chest level. It is also anticipated that, typically, it will be desirable to position the visual data acquisition device on a front part of the recorder's body, so that the visual data acquisition device records activity that

PATENT OWNER
Ex 2004

> occurs in front of the recorder, the assumption being that the recorder will usually position his body so that it faces the activity of interest to the recorder. Further, it may be desirable to mount the visual data acquisition device on the front of the recorder's head (e.g., on the forehead), since it is even more likely that the recorder will position his head to look in the direction of activity of interest to the recorder. Mounting the visual data acquisition device on the head also enables the point of view of the visual recording to be changed without interaction by the recorder, and enables changes in point of view that are expected, for the reason given above, to increase the likelihood of obtaining content of interest. FIG. 4 is a perspective view of a visual data acquisition device 401 attached to a head harness 402 that is worn by a recorder 403, illustrating one way of mounting a visual data acquisition device on the front of the recorder's head. However, mounting the visual data acquisition device on the recorder's head can make the visual data acquisition device more visible (and thus, perhaps, more distracting or disconcerting) to others. Since one goal of the invention is to enable unobtrusive recording, this can be undesirable, as discussed elsewhere herein. The visibility of the visual data acquisition device can be reduced (and the associated (*sic*)distractiveness mitigated) by mounting the visual data acquisition device on the side of the recorder's head (by, for example, mounting the visual data acquisition device on a headband near the recorder's ear, or on the side of a pair of eyeglasses worn by the recorder), rather than on the recorder's forehead.

Id. at 15:12-51.

> It may also be desirable to mount the visual recording display device in the vicinity of the eyes of the recorder (e.g., on the head, neck or shoulders) in a manner that enables the recorder to readily move the visual recording display into and out of the recorder's field of view. Though mounting a visual recording display device in this manner may be more obtrusive than mounting the visual recording display device on another part of the body, such mounting may be desirable—as compared to, for example, mounting the visual recording display device on the hand or wrist, or implementing the visual recording display device as an apparatus to be carried in the recorder's pocket—since the recorder can view a display of a visual recording without occupying a hand, thus leaving the hand free, either to effect control of the recording unit or to enable the recorder to participate in the event being recorded. For example, the visual recording display device can be mounted (e.g., with a hinge or a sliding mechanism) on glasses worn by the recorder so that the visual recording display device can be moved back and forth between positions in front of and away from one (preferable, so that the other eye is free for other viewing) or both eyes of the recorder. Alternatively, a display has recently been developed that can be embedded in eyeglasses (in a manner that is almost completely invisible to others), such that the wearer of the eyeglasses can control whether the display is visible or not (in the latter case, the wearer of the eyeglasses can see normally through the eyeglasses).

Id. at 43:12-39.

PATENT OWNER
Ex 2004

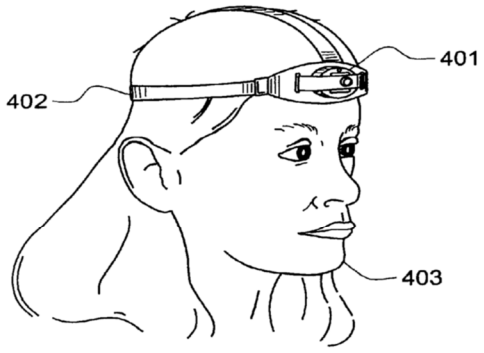


Figure 4

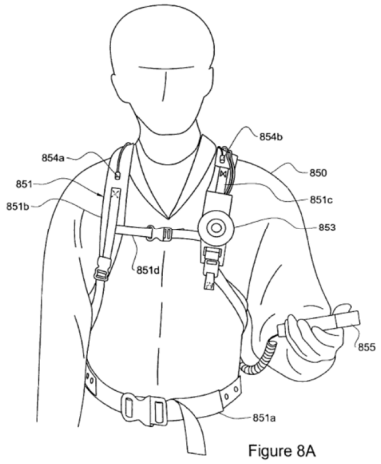


Figure 8A

> The visual data acquisition device can also be mounted on or near the recorder's head. For example, the visual data acquisition device can be attached to a head harness that is worn by a recorder, as illustrated in FIG. 4, discussed above. The visual data acquisition device can also be mounted, for example, on a headband near the recorder's ear or on the side of a pair of eyeglasses worn by the recorder, as also discussed above.

Id. at 69:8-15. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent No. 6,349,001 ("Spitzer"), assigned to Google, disclosed a system with "complete integration of the camera assembly within the eyeglass frame and lens system of the eyeglasses":

> An eyeglass interface system is provided which integrates interface systems within eyewear. The system includes a display assembly and one or more audio and/or video assemblies mounted to an eyeglass frame. The display assembly is mounted to one temple and provides an image which can be viewed by the user. The audio or video assembly is mounted to the other temple and is in communication with the display assembly. The audio or video assembly may comprise a camera assembly and/or an audio input or output assembly, such as a microphone and/or speakers. The camera assembly is placed on the temple to record the visual field observed by the user. A head-tracking assembly may be provided to track the position of the user's head. A number of applications can be provided with the present system, such as a telephone system, pager system, or surveillance system. The present eyeglass interface system is compact, offers the user hands-free operation, and provides an attractive appearance due to concealment of the assemblies within the eyeglass frame and lenses.

Spitzer at Abstract.

> The eyeglass interface system uses an eyeglass optical system or display assembly such as that in accordance with U.S. patent application Ser. No. 08/844,098, filed on Apr. 18, 1997, now U.S. Pat. No. 5,886,822, the disclosure of which is incorporated by reference herein. More particularly, the eyeglass interface system of the present invention comprises an eyeglass frame having first and second lens holders and first and second temples configured to be supported on a user's head. The display assembly used in the eyeglass interface system comprises an image source supported by the first temple, an optical pathway disposed internally within the first lens to receive light from the image source, and an insert in the first lens to redirect light on the optical pathway to the user's eye, as described more particularly in U.S. patent application Ser. No. 08/844,098. An audio and/or video assembly is mounted to the second temple, preferably in communication with the display assembly. The audio and/or video assembly is operative to receive or transmit audio and/or video signals. Interface circuitry is provided in communication with the display assembly and the audio and/or video assembly.
>
> In a typical configuration according to the present invention, the display assembly is mounted within one half of the eyeglasses. The audio and/or video assembly comprises a camera assembly mounted within the other half. The system may also include audio transducers (microphone and/or speakers) which provide audio data and/or which collect sound for recording, digital signal processing and analysis. In this way, the microphone may also provide voice activated commands to the system. Additionally, the eyeglass system may include batteries and an RF or infrared communication system to eliminate the need for a cable to the glasses. Various types of systems may be formed using one or more of the subsystems. In its most complete form, the present eyeglass interface system includes the following subsystems or assemblies: an audio input assembly for collecting speech input from the user, a display assembly, an audio output assembly, a camera assembly, and a head-tracking assembly to provide a computer with the position of the user's head. Thus, the eyeglass interface system includes audio, video, tracking and power modules.
>
> The eyeglass interface system of the present invention provides computer input and output in highly compact forms, preferably entirely within eyeglasses, which look to the casual observer like ordinary eyewear. In some embodiments of the invention, the subsystems or assemblies are entirely concealed within the eyeglass frame and lenses. The invention comprises not only the integration of the hardware subsystems within an eyeglass frame, but also the integration of the subsystems with hardware and software intended for specific functions.
>
> The present invention is an improvement over devices in the prior art owing to the complete integration of the camera assembly within the eyeglass frame and lens system of the eyeglasses. The mechanical aspects of the camera, including focusing mechanisms, are integrated within the eyeglass temple, as are the electronics in the form of a multi-chip module integrated in the temple. Additionally, lenses and

PATENT OWNER
Ex 2004

optical surfaces of the camera assembly are integrated in the temple and even in the eyeglass lens itself. In this way, the camera assembly may attain its most compact form, may be made light in weight, and may attain a greater degree of concealment and functionality than prior art devices. In addition, the present invention places the field of view of the camera in proximity to or convergent with the operator's field of view, so that the camera records the visual field observed by the user. The present invention allows the camera to have the same line of sight as the user's eye, without parallax error.

Id. at 1:65-2:65.

The integration of a camera assembly within eyewear is important for a number of applications, including image acquisition, data input by character recognition, bar code scanning, face recognition, and the like. The key factors which must be addressed in order to integrate a camera within eyewear are (i) portability, and (ii) making the camera adjustable so that it is aimed precisely where the user is looking with his or her eyes.

Id. at 4:24-31.

FIG. 2 illustrates a design based on concealment of the camera 210 within the temple 205 of eyeglasses 250. The camera may comprise, for example, ELMO Model QN42H, which includes optional focusing lenses within the camera. The camera is mounted within a plurality of supports 220 and adjusted in angle 221 so that the field viewed by the camera overlaps the field viewed by the user.

Id. at 4:46-52.

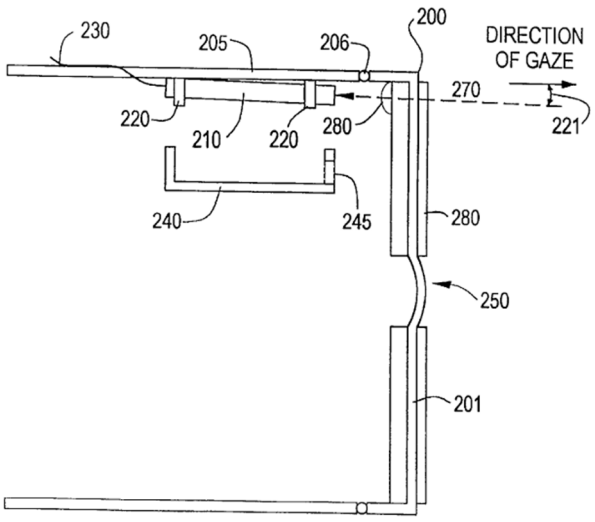


FIG. 2

A camera system may be integrated within the eyeglass temple in a further manner, as shown in FIG. 5. A charge coupled device (CCD) or complementary metal oxide

semiconductor (CMOS) image sensor 510 is mounted to a sliding base 520 in contact, or partially within, or even fully within, eyeglass temple 205.

Id. at 5:30-35.

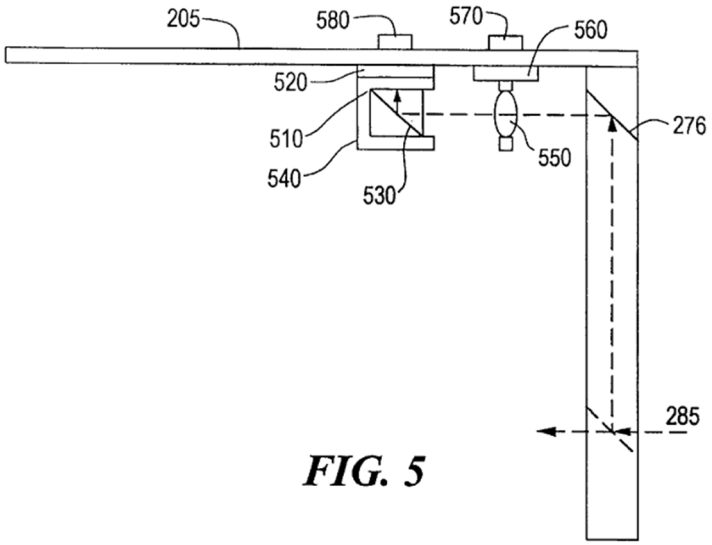


FIG. 5

The eyeglass embodiment of the various camera systems comprises an improvement over the prior art alternatives owing to its light weight and compact nature, as well as owing to the automatic aiming of the camera by virtue of its mounting within eyewear, and its use of the eyeglass lens to align the camera to the user's pupil. Additionally, such systems can be used without employing the hands, making it possible to conduct other tasks while using the device.

Id. at 7:19-27.

The camera system comprises standard CCD or CMOS image Sensors that are commercially available from Texas Instruments, Kodak, and other sources. These sensors are used in camcorders and electronic cameras. The image sensors are combined with the eyeglass optics so that the camera has a view of the world as seen by the user's eye. The camera may be mounted in the same optical system as the display, or as shown in FIG. 1, the camera system optics may be mounted for use in the right eye, and the display system optics for use in the left eye.

Id. at 11:1-10.

The camera and microphone within the glasses allow the system to perform many of the functions of a camcorder or still camera. Audio and video may be recorded in electronic memory and then may be transmitted to tape or disk storage media. The advantages over current camcorders are that the interface system, including the camera, is largely hands-free. The only requirement is that the user activate the recorder either by spoken command or by the use of buttons on the recording device. A head tracking position sensor can be used to stabilize the image. In such a device,

> the recording device (for example, tape recorder, recordable digital video disk system, recordable compact disk System) are located in module 1001.

Id. at 10:55-67.

> Many Surveillance Systems are possible using the interface System, including Systems in which the Surveillance is concealed by the eyeglass frame. The System may be used by law enforcement personnel to transmit audio and video between agents, in a manner similar to the video conferencing application. For example, an agent on the street may see an image collected by an agent on a roof top. Another application involves patient monitoring in hospital intensive care units. A third surveillance application comprises a baby monitor. The glasses may receive images and audio from a camera located in a nursery so that the parent may see and hear the baby from anywhere in the house.

Id. at 11:58-12:2. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent No. 7,806,525 ("Howell") disclosed "a pair of glasses with a camera" wherein the "camera can be partially or fully embedded in the glasses" or "the camera can be removably attached to the glasses, such as removably attached to a temple of the glasses":

> One embodiment pertains to a pair of glasses with a camera. For example, the camera can be partially or fully embedded in the glasses. In another embodiment, the camera can be removably attached to the glasses, such as removably attached to a temple of the glasses. The glasses can also include one or more various other electrical components. These other electrical components can work separately or in conjunction with the camera.

Howell at Abstract.

> BACKGROUND OF THE INVENTION. Cameras are popular consumer electronic devices that allow users to capture images, i.e., taking pictures. For many years cameras have recorded their images on special film and then subsequently developed into physical pictures. More recently, digital cameras and digital photography have become popular. With digital cameras, the images can be recorded as digital data. The stored digital images can thereafter be printed, stored, or transmitted electronically. Cameras are special purpose devices, separately toted by users if they wish to have picture-taking capabilities. Unfortunately, this means that users often are without their cameras when they have a desire to take pictures. Though mobile telephones have been including cameras for taking pictures, there remains a need for improved ways for cameras to be toted by users.

SUMMARY OF THE INVENTION. The invention pertains to a pair of glasses with one or more attached, embedded or partially embedded electrical components. In a number of the embodiments of the invention, with one or more electrical components in the glasses, the electrical components are much easier to operate.

One aspect of the invention pertains to a pair of glasses having a camera. In one embodiment, the camera can be partially or fully embedded in the glasses. For example, the camera can be embedded in a temple of the glasses. In another embodiment, the camera can be removably attached to the glasses. For example, the camera can be removably attached to a temple of the glasses. The glasses can also include one or more various other electrical components. These other electrical components can work separately or in conjunction with the camera.

The invention can be implemented in numerous ways, including as a system, device, apparatus, and method. Several embodiments of the invention are discussed below.

One embodiment of the invention pertains to a pair of glasses for a user that includes at least an eyeglass frame having at least first and second lens holders and first and second temples, and a camera partially or fully embedded in the first temple. Another embodiment of the invention pertains to a pair of glasses for a user that includes at least an eyeglass frame having at least first and second lens holders and first and second temples, and a camera mechanically connectable to the first temple.

Id. at 2:53-3:29.

FIG. 10 shows an embodiment of the invention where a user is wearing a pair of glasses with electrical components, tethered to a base, which is connected to a portable device.

Id. at 4:5-7.

PATENT OWNER
Ex 2004

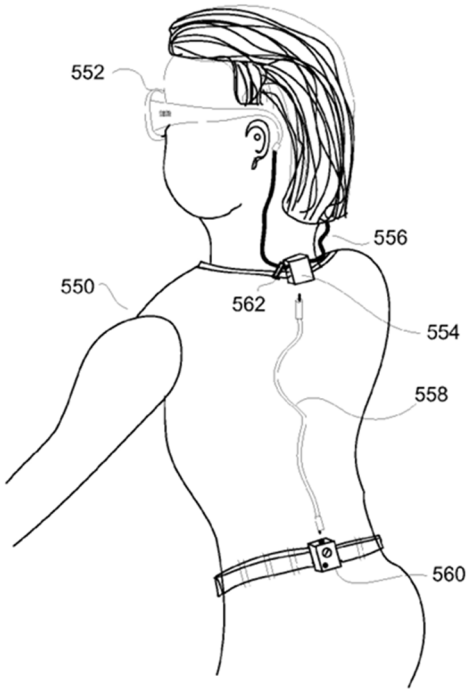


FIG. 10

Id. at Fig. 10.

> FIGS. 21A and 21B are diagrams illustrating a pair of glasses having a camera coupled thereto, according to one embodiment.
>
> FIG. 22 is a diagram of a pair of glasses having a camera according to one embodiment of the invention.
>
> FIG. 23A is a diagram of a pair of glasses having a camera according to one embodiment of the invention.

Id. at 4:49-56.

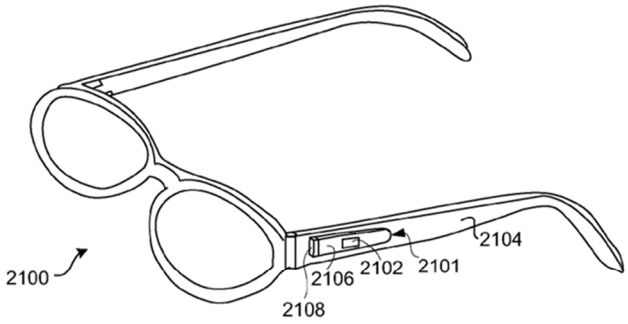


FIG. 21A

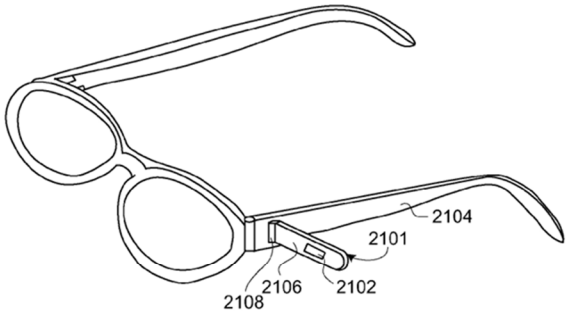


FIG. 21B

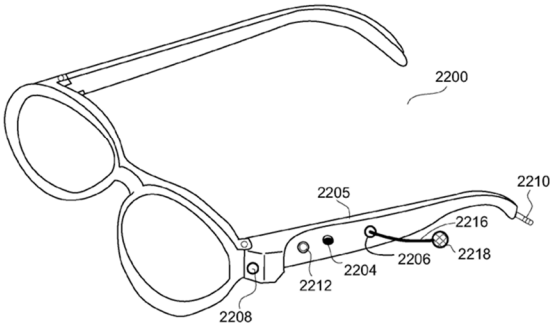


FIG. 22

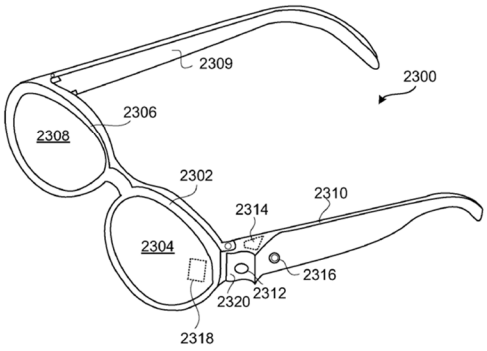


FIG. 23A

Id. at Figs. 21A, 21B, 22, 23A.

> FIGS. 21A and 21B are diagrams illustrating a pair of glasses 2100 having a camera 2101 coupled thereto, according to one embodiment. The camera includes an image sensor 2102 and a camera housing 2106 (also referred to as a camera support arm). In this embodiment, the camera 2101 is rotatably coupled to an exterior surface of a temple 2104 of the pair of glasses 2100. The camera support arm 2106 is attached to the temple 2104. The camera support arm 2106 can couple to the temple 2104 using a hinge 2108. In one implementation, the hinge 2108 can use a spring or cam mechanism so that the camera support arm 2106 is held either against the temple 2104 when not in use or held in an open or extended position when in use. FIG. 21A illustrates one position of the camera support arm 2106 when the camera 2101 is not in use. FIG. 21B illustrates one position of the camera support arm 2106 when the camera 2101 is in use. The presence of the camera 2101 with the pair of eyeglasses 2100 enables a wearer of the pair of eyeglasses 2100 to take pictures of what the wearer is looking at. It should be noted that other supporting circuitry such as data storage for pictures, switches, battery, and electronics for the camera 2101 can be in the temple 2104, in the camera support arm 2106, elsewhere in the pair of glasses 2100, or even tethered thereto. However, in one implementation, the camera 2101 is completely self-contained in the camera housing 2106. In one embodiment, the hinge 2108 can also serve as a switch to turn the image sensor 2102 on or off. …

> In one embodiment, the camera support arm (camera housing) 2106 is removably coupled to the hinge 2108. As such, the camera 2101 can be removed from or attached to the pair of glasses 2100. Indeed, the camera support arm (camera housing) 2106 can be a camera body that houses electronics for the camera 2101. In such case, the camera 2101 can operate as a camera apart from the pair of glasses 2100.

Id. at 24:63-25:53.

> Depending on the embodiment, electrical components of a camera can be in a pair of glasses, and/or a base tethered to the glasses, and/or a portable device tethered to the glasses or to the base. For example, the memory 753 can be in the base tethered to the glasses.
>
> The location of the lens 758 can vary depending on the embodiment. In one embodiment, referring to FIG. 1, one location is at the bridge of the glasses, with the lens of the camera facing forward. In this situation, what the user sees is substantially what the captured image would be. In other words, in a general sense, what the user sees is what the user gets. With such an embodiment, it is relatively easy for a user to take pictures, hands-free. In another embodiment, another location for the lens 758 are at a side portion adjacent to a lens holder, before the joint of the corresponding temple, such as at 116 in FIG. 1. Again, the lens of the camera faces forward. Some of the electrical components of the camera can be in that location, and other components in the temple 104. These components are electrically connected through one of the joints, such as with a flexible pc board. In yet another embodiment, the lens 758 can face sideways and outwards in a temple of a pair of glasses, towards the left or right side of the user.

Id. at 17:63-18:17.

> Regarding storing the images, in one embodiment, the images are stored locally. One approach to determine which image to store is the first-in-first-out approach. Once the camera is turned on, the camera takes pictures continually in an automatic mode, such as once every few seconds. When the memory becomes full or under other pre-set or pre-programmed condition, the first picture stored will be deleted when the next picture comes in. In another embodiment, the digital content in one picture is compared to the digital content in, for example, the fifth picture further down. If the difference between the two is not more than a pre-set threshold, the four pictures in between will be deleted. One approach to determine the difference is by comparing the total charges collected by the CCD chip for the two images. If the two sets of charges do not differ by more than a certain threshold, the images in between would be deleted.
>
> The images captured can also be stored at a remote site. For example, the glasses can upload the images to a computer, wirelessly or through a wired connection from a connector at the glasses.

PATENT OWNER
Ex 2004

Id. at 18:18-37.

> FIG. 15 shows an operation 800 of taking certain actions based on images captured by a pair of glasses with a wireless transceiver, according to one embodiment of the invention. This operation can be used by a police officer on patrol. Before the officer gets out of his patrol vehicle to confront a suspect, the officer can inform the station. At that point, the camera is turned on 802.
>
> There can be different approaches to turn on the camera. In one embodiment, an operator at the station can remind the officer to turn on the camera. Or, the operator can remotely turn on the camera. In yet another embodiment, the camera can be automatically turned on under certain condition. One such condition is that if the camera is out of the patrol vehicle, the camera is automatically turned on. With the glasses having the capability to wirelessly communicate with the patrol vehicle, one method to detect if the glasses are out of the patrol vehicle is based on the wireless signal strength of the glasses. The patrol vehicle can detect the signal strength of the wireless signals, which depends on the distance between glasses and the vehicle. A threshold can be set. If the signal strength is below the preset threshold, the glasses would be assumed to be out of the car, and the camera would be automatically turned on.
>
> After the camera is turned on 802, the glasses start to continually take 804 pictures, such as once every few seconds. The pictures taken are automatically transmitted back 806 to the patrol vehicle in a wireless manner. In this situation, the patrol vehicle serves as a hub, which stores the pictures. Then, the hub re-transmits 808 the pictures back to the station. Note that the pictures can be compressed by standard algorithms before they are transmitted. This compression mechanism can be performed by a computer in the patrol vehicle. When the station gets the pictures, they are de-compressed before being viewed, such as by the operator. The pictures enable the operator at the station to see what the officer is confronting. This effectively allows the operator at the station to perform real-time monitoring of or for the officer. If it is a high risk situation, the operator can quickly react 810, such as by dispatching additional support for the officer. In one embodiment, the glasses can include not only a camera but also a microphone for audio pickup, such as sounds from the officer, suspect, witness or environmental sounds (such as door opening, gun shot, etc.).

Id. at 18:38-19:13.

> In one embodiment, the camera utilized in the various embodiments is a digital camera, namely, a digital image capture device. The camera can be a still camera or a motion camera (i.e., video camera). The camera can be designed for manual focusing, auto-focusing, or predetermined fixed focusing. The camera can also support a wide angle or panoramic view.

PATENT OWNER
Ex 2004

Id. at 29:64- 30:3. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent Publication 2005/0174470 ("Yamasaki"), published Aug 11, 2005, filed Feb 7, 2005, and issued as U.S. 7,573,525, disclosed a head-mounted camera "formed substantially in the shape of a pair of spectacles":

> [0071] The head-mounted camera (hereinafter simply referred to as the "camera") 1 includes, as shown in FIG. 1, a head-mounted unit 2 formed substantially in the shape of a pair of spectacles, a controller/recorder 4, which serves as the main body of the camera 1, connected to the head-mounted unit 2 via connecting means, such as a cable 3, and a remote controller 5 for remotely performing input operations for the camera 1.
>
> [0072] The head-mounted unit 2 allows a user to observe a subject substantially directly in a see-through display mode and also to pick up an image of the subject. The head-mounted unit 2 can be worn on the head in a manner similar to ordinary eyesight-correcting spectacles, as is seen from the shape of the head-mounted unit 2. The head-mounted unit 2 is light and small so that the weight and the size thereof can be as close as possible to those of actual spectacles.
>
> [0073] A connecting terminal 3 a provided at one end of the cable 3 is connected to a cable connecting terminal 21 (see FIG. 2) of the head-mounted unit 2, and a connecting terminal 3 b provided at the other end of the cable 3 is connected to a cable connecting terminal 49 (see FIG. 7) of the controller/recorder 4, thereby connecting the head-mounted unit 2 with the controller/recorder 4. As means for electrically connecting the head-mounted unit 2 with the controller/recorder 4, although wired means such as the cable 3 is used, wireless means for wirelessly connecting the two elements may be used.

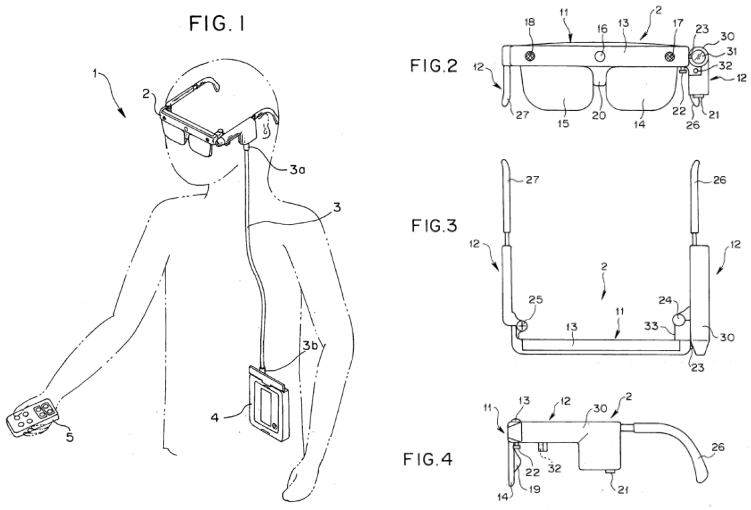
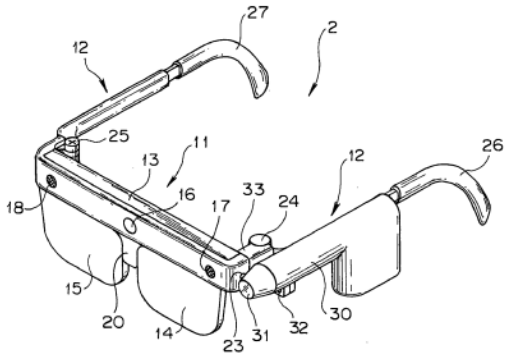


FIG. 5

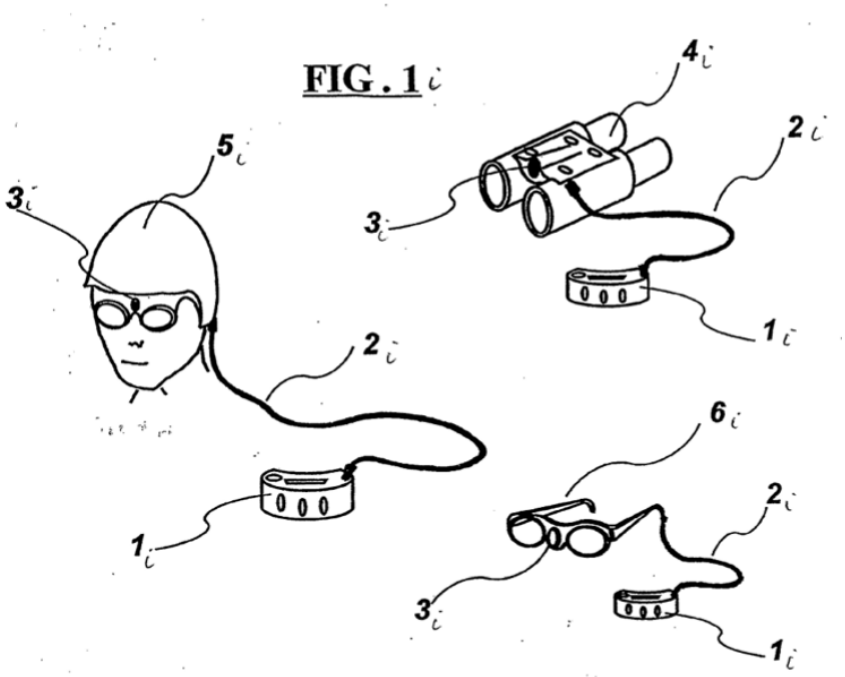


[0074] The controller/recorder 4 controls the entire camera 1 and also records images picked up by the head-mounted unit 2. The controller/recorder 4 is also formed to be as light and small as possible so that it can be used under various conditions. For example, it can be attached to a belt at the user's waist or it can be stored in an inner pocket of a jacket. The controller/recorder 4 can also be stored in a bag by using a long cable 3.

[0078] The head-mounted unit 2 includes a front portion 11 corresponding to lens, rims, a bridge, and joint portions of regular spectacles and temples 12 extended from the left and right sides of the front portion 11 in the backward direction (opposite to the subject) and foldable with respect to the front portion 11.

Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

WO2004114654A2 ("Armand") published December 29, 2004, disclosed "the storage of incoming images by means of a vision device":

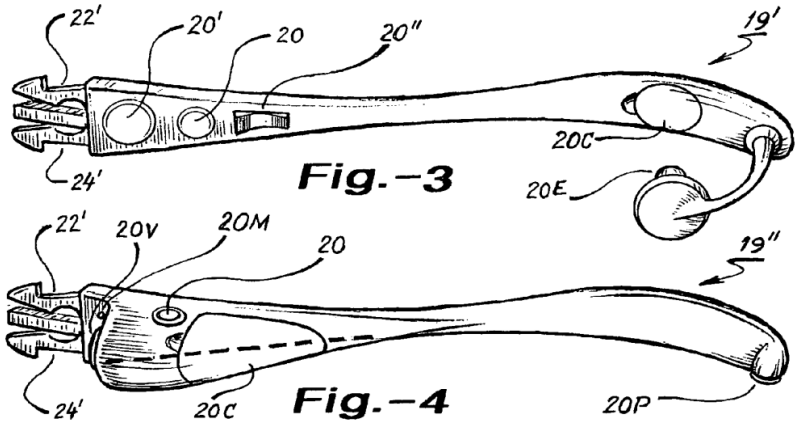


It was thus known to have a pair of eyeglasses having a sensor that captures sensor data.

U.S. Patent Publication No. 2005/0036103 ("Bloch"), published Feb 17, 2005, filed: Aug 10, 2004, issued as U.S. 7,059,717, disclosed eyeglasses with "an integral conventional videocam":

> FIG. 4, is a pictorial view showing an exemplified optional video-camera integrated within the left temple/support-arm.

Bloch at [0024].



Id. at Figs. 3, 4.

> The embodiment of FIG. 4 features an integral conventional videocam (ie: digital-camera) 20V with conventional On/Off-button 20, a conventional mini-microphone 20M, and optional conventional button-battery (unshown) power-supply 20C in the form of a female-receptacle 20P which function is akin to that of a conventional computer USB-port for subsequent downloading of pictures from a conventional internal microprocessor (unshown) to a conventional computer. This aggregation thus defining a digital-camera which can compile a series of individual snap-shot pictures, or process rapid-frame sequences tantamount to a video. Although the objective-lens is exemplified as situated at 20V, it can be arranged further forward if wide-angle images are desired. Therefore, while the basic objective is to provide the user of my EQS™-eyeglasses (ref. FIG. 1) with the convenience of readily interchanging between traditional appearing temple/support- arms 19 and 21, to a more sport-activity type of eyeglasses by readily substituting the temple/strap-assembly 32;—a further object of my versatile eyeglasses is to explore the full potential of interchangability as is set forth in the interchangeable electronics-equipped temple/support-arms of FIGS. 3 and 4.

Id. at [0055]. Therefore, it was known to have a pair of eyeglasses having a sensor that captures sensor data.

In addition to cameras mounted on eyeglasses, other wearable camera systems were known in the art. For example, at least as early as March 2000, Semco Corporation had made and sold a body-worn camera for police and law enforcement called "CopCam." *See, e.g.*, "Police Video: Up Close and Personal," by Dale Stockton, Law and Order Magazine, August 1999; *see*, Section III.B.1.

Additionally, the charted references and products described in Section III.A.1 also disclose a pair of eyeglasses having a sensor that captures sensor data.

c. References Disclosing Contiguously Continuing to Record, Excluding from Overwriting, and Automatically Overwriting if not Designated for Saving

References disclosing "contiguously continuing to record the sensor data," "automatically overwrite portions of the sensor data that were recorded in the first memory that were not designated for saving" and "upon reaching at least one of the first portion and the second portion…excluding from overwriting the at least one of the first portion and second portion" are

PATENT OWNER
Ex 2004

discussed above in Section III.B.2.d-e (detailing prior art disclosing recording and preserving video data using circular buffers).

d. Motivations to Combine

A hallmark of the *KSR* approach to obviousness in flexibility. *See KSR,* 550 U.S. at 414-18 (rejecting the Federal Circuit's "rigid" application of the teaching, suggestion, or motivation to combine test, instead espousing an "expansive and flexible" approach). The Supreme Court in *KSR* mandated flexibility in at least two respects: first with regard to the proper understanding of the scope of the prior art, and second with regard to appropriate reasons to modify the prior art. In its cases decided since *KSR*, the Federal Circuit has reiterated these two aspects of flexibility. *See, e.g., Intel Corp. v. Qualcomm Inc*., 21 F.4th 784, 795 (Fed. Cir. 2021) (the obviousness analysis is not "confined by a formalistic conception of the words teaching, suggestion, and motivation").

The Supreme Court instructed the Federal Circuit in *KSR* that persons having ordinary skill in the art have common sense, which may be used to glean suggestions from the prior art that go beyond the primary purpose for which that prior art was produced. *Id.*. at 421-22. Thus, the Supreme Court taught that a proper understanding of the prior art extends to all that the art reasonably suggests, and is not limited to its articulated teachings regarding how to solve the particular technological problem with which the art was primarily concerned. *Id*. at 418 ("As our precedents make clear, however, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). "The obviousness analysis cannot be confined . . . by overemphasis on the importance of published articles and the explicit content of issued patents." *Id*. at 419; *see also Randall Mfg. v. Rea*, 733 F.3d 1355, 1362 (Fed. Cir. 2013) (recalling *KSR's* criticism of an overly rigid approach to obviousness that has "little recourse to the knowledge, creativity, and common sense that an ordinarily skilled artisan would

PATENT OWNER
Ex 2004

have brought to bear when considering combinations or modifications," and discussing the importance of evidence showing "the knowledge and perspective of one of ordinary skill in the art" that may provide "critical background information that could easily explain why an ordinarily skilled artisan would have been motivated to combine or modify the cited references to arrive at the claimed inventions").

"Under the correct analysis, any need or problem known in the field of endeavor at the time of invention and addressed by the patent can provide a reason for combining the elements in the manner claimed." *KSR*, 550 U.S. at 420. The Supreme Court emphasized the principle that "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *Id.* at 416. A key inquiry is whether the "improvement is more than the predictable use of prior art elements according to their established function." *Id.* at 417. Indeed, the Supreme Court held that a person of ordinary skill in the art is "a person of ordinary creativity, not an automaton" and "in many cases a person of ordinary skill in the art will be able to fit the teachings of multiple patents together like pieces of a puzzle." *Id*. at 421. The Federal Circuit has also clarified, moreover, that a proposed reason to combine the teachings of prior art disclosures may be proper, even when the problem addressed by the combination might have been more advantageously addressed in another way. *PAR Pharm., Inc. v. TWI Pharms., Inc.*, 773 F.3d 1186, 1197-98 (Fed. Cir. 2014) ("Our precedent, however, does not require that the motivation be the *best* option, only that it be a *suitable* option from which the prior art did not teach away.") (emphasis in original).

The rationale to combine or modify prior art references is significantly stronger when the references seek to solve the same problem, come from the same field, and correspond well together. *See In re Inland Steel Co.*, 265 F.3d 1354, 1362 (Fed. Cir. 2001) (allowing two references to be combined as invalidating art under similar circumstances where the art "focus[ed] on the same

PATENT OWNER
Ex 2004

problem ... c[a]me from the same field of art [and] ... the identified problem found in the two references correspond[ed] well").

The Supreme Court has further held that, "[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill . . . ." *Id*. at 417.

Multiple teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine two or more of the prior art references set forth herein come from many sources, including the prior art itself (individual references and as a whole), common knowledge, common sense, predictability, expectations, industry trends, design incentives or need, market demand or pressure, market forces, obviousness to try, the nature of the problem faced, and/or knowledge possessed by a person of ordinary skill. Defendants reserve the right to present expert testimony on, among other things, the teachings, suggestions, motivations, and/or reasons to modify any of the references and/or to combine any two or more of the prior art references presented in Exhibits A-1 through M-4 and herein. Certain of these rationales are discussed more specifically below. The fact that other rationales are not discussed more specifically should not be interpreted as an admission or concession that the other rationales do not apply.

As further described below, motivations to combine the teachings of the prior art references disclosed herein are found in: (1) the knowledge of persons of ordinary skill in the art, including the express, implied, and inherent teachings of the prior art references themselves as described herein and in Exhibits A-1 through M-4, and the admitted prior art of the Asserted Patents; (2) the

PATENT OWNER
Ex 2004

fact that the prior art is generally directed towards the same subject matter as the Asserted Patents; (3) market forces and design incentives, including the need to address technical issues and suggest similar solutions; and/or the predictable results obtained by applying known techniques to modify existing solutions.

(1) Same Field of Technology

Each of the identified prior art references relate to the field of digital recording technology. The references disclose recording systems using cameras and digital recorders to save events. Many of the references are directed to surveillance systems for law enforcement.

A person of ordinary skill in the art would naturally look to these references, related patents, patent applications, publications, and related commercial products/systems to provide insight into how the industry/field as a whole, inventors, authors, or companies viewed and applied these inventions, teachings, and commercial products/systems. Based on their related disclosures, one of ordinary skill in the art at the time of the invention would have been motivated to apply the teachings from one reference to another in the same way.

(2) Market Forces and Design Incentives Drove Similar Solutions in the Prior Art

Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. Indeed, the need to capture pre-event and video data and to preserve that data for multiple events and the need to capture video from the vantage point of a person was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the prior art references identified herein. Moreover, because there were a finite number of predictable solutions for capturing video from the vantage point of a person and for capturing event data for multiple event,

PATENT OWNER
Ex 2004

including data from before a triggering event, and preserving it, a person of ordinary skill in the art had good reason to pursue and/or combine known options and related applications.

(3) Combination of Known Methods/Techniques/Elements Yields Predictable Results

Generally, motivation to combine any of the references for the Asserted Patents with other references exists within the references themselves, as well as within the knowledge of those of ordinary skill in the art at the relevant time. Many of the identified references address the same technical issues and suggest similar solutions in the field of digital recording technology. The need to provide a way to capture video from the vantage point of a person and a way to capture pre-event video data for multiple events and to preserve that data, was already recognized in the prior art and the field of the invention and would provide a person of ordinary skill in the art motivation to combine the references identified above.

Moreover, the claimed invention is built upon technology that significantly pre-dates the invention. As the Asserted Patents recognize, it was known to continuously store images in a looping (circular) memory, and upon receiving a trigger signal, protect a portion of the memory. *See e.g.*, '752 patent at 1:35-46. The Asserted Patents also recognize that it was known to preserve data both before and after the trigger signal, for example, 20 seconds before and 10 seconds after the accident. *See e.g.*, *Id*. at 1:30-34. The Asserted Patents further recognize that "a camera mountable to a pair of eyeglasses that continuously saves recorded images to a circular buffer in a computer on the user's waist" was known. *See e.g.*, '034 patent at 1:56-58. Alternatively, it was known to stream images from a pair of eye glasses directly to a wireless memory that has a large capacity. *See e.g.*, *Id*. at 1:61-63. Finally, it was well known to store and preserve data for multiple events in a circular buffer. *See e.g.*, Kawasaki at Abstract; Yerazunis at Abstract; Chen at [0022].

PATENT OWNER
Ex 2004

C. P.R. 3-3(c) Disclosures: Charts Identifying Where in Each Item of Prior Art Each Element of the Asserted Claim Is Found

Exhibits A-1 through M-4 of these contentions are charts that specifically identify where each element of each Asserted Claim is found in the prior art.

Given the overlap in claim terms among the Asserted Claims, to the extent at least one claim chart in the Exhibits identifies any prior art reference as disclosing or teaching such claim limitation or a similar claim limitation, Defendants' contentions with respect to such claim limitation and such prior art reference as found in such claim chart, are incorporated by reference into all other charts with a similar limitation. Furthermore, the claim chart Exhibits reference and incorporate various portions of this cover pleading describing where particular elements of the Asserted Claims are found in prior art. *See, e.g.*, Sections III.B.2.b – e; III.B.3.b – c; III.B.4.b; III.B.5.b – c.

The claim charts in these contentions provide example sections within the prior art references that teach or suggest each and every element of the assert claims either expressly or inherently. The contentions set forth obviousness arguments based on the disclosures in each of the references, teachings well known at the time of filing, admitted prior art, and the knowledge of a person of ordinary skill in the art at the time the respective patent application was filed. If needed, all of the art disclosed in the exhibits or herein can be used in combination for an obvious determination.

D. P.R. 3-3(d) Disclosures: Invalidity Under 35 U.S.C. § 112

Pursuant to P.R. 3-3(d), Defendants contend that certain claims of the Asserted Patents are invalid under 35 U.S.C. § 112 because (1) the claims are indefinite; (2) the claims are not enabled; and/or (3) the claims lack adequate written description. Defendants' contentions that the following claims are invalid under 35 U.S.C. § 112 are made in the alternative, and do not constitute, and

PATENT OWNER
Ex 2004

should not be interpreted as, admissions regarding the construction or scope of the claims of the Asserted Patents, or that any of the claims of the Asserted Patents are not anticipated or rendered obvious by any prior art.

These contentions are based on Defendants' current understanding of Plaintiff's Infringement Contentions. To the extent Plaintiff contends that the prior art references identified above would not enable a person of ordinary skill to make or use the elements of the Asserted Claims against which they are cited, and to the extent Plaintiff contends that the Asserted Claims cover something different from what Defendants understand them to cover, the Asserted Claims may not comply with the enablement, written description, and/or definiteness requirements of 35 U.S.C. § 112 ¶¶ 1 & 2. Because compliance with the requirements of 35 U.S.C. § 112 ¶¶ 1 & 2 depends on the construction of the claims—and no claim construction positions have been exchanged, no claim construction order issued, and no expert discovery undertaken—Defendants' positions on written description, enablement, and/or indefiniteness are necessarily preliminary at this early stage of the case. Defendants reserve all rights to amend or further revise these contentions based on further developments in the case in accordance with the Court's Rules or as otherwise authorized by the Court.

The written description and enablement requirements are analyzed by comparing the claims with the disclosure in the specification. If the claimed invention does not appear in the specification, the claim fails regardless of whether one of skill in the art could make or use the claimed invention. *See, e.g., Ariad Pharms., Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1348 (Fed. Cir. 2010).

Section 112 requires that the specification shall describe "the manner and process of making and using [the claimed invention], in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make

PATENT OWNER
Ex 2004

and use the [claimed invention]." 35 U.S.C. §112, ¶ 1. To satisfy the enablement requirement, a patentee must "describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation." *See, e.g., LizardTech, Inc. v. Earth Res. Mapping, Inc.*, 424 F.3d 1336, 1344-45 (Fed. Cir. 2005).

Section 112 further requires that a patent specification contain "a written description of the invention." 35 U.S.C. § 112. "The purpose of the written description requirement is to prevent an applicant from later asserting that he invented that which he did not." *Amgen, Inc. v. Hoechst Marion Roussel, Inc.*, 314 F.3d 1313, 1330 (Fed. Cir. 2003). "[T]he test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharmaceuticals, Inc. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010). "[T]he test requires an objective inquiry into the four corners of the specification from the perspective of a person of ordinary skill in the art. Based on that inquiry, the specification must describe an invention understandable to that skilled artisan and show that the inventor actually invented the invention claimed." *See, e.g., Ariad*, 598 F.3d at 1351-52.

A patent must also be precise enough to afford clear notice of what is claimed. *Nautilus, Inc. v. Biosig Instruments, Inc*., 134 S. Ct. 2120, 2124 (2014). A patent is invalid for indefiniteness under Section 112 if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope of the invention. *Id*. "[I]t cannot be sufficient that a court can ascribe some meaning to a patent's claim; the definiteness inquiry trains on the understanding of a skilled artisan at the time of the patent application, not that of a court viewing matters post hoc." *Id*. at 2130. The definiteness inquiry necessarily demands that the "patent and prosecution history disclose a single known

PATENT OWNER
Ex 2004

approach or establish that, where multiple known approaches exist, a person of ordinary skill in the art would know which approach to select." *Id*.

A claim term can be indefinite based on multiple grounds ranging from substantive concerns to unresolvable drafting errors, each of which can be fatal to the validity of the claims as a matter of law. For example, the Federal Circuit has repeatedly held that apparatus claims that contain method claim limitations are indefinite because it is impossible to determine when direct infringement occurs. *See, e.g., Rembrandt Data Techs., LP v. AOL, LLC*, 641 F.3d 1331, 1339-40 (Fed. Cir. 2011) (an independent claim that recited both an apparatus and a method of using that apparatus was indefinite, as was its dependent claims); *IPXL Holdings v. Amazon.com*, 430 F.3d 1377, 1384 (Fed. Cir. 2005); *In re Katz Interactive Call Processing Patent Litigation*, 639 F.3d 1303, 1318 (Fed. Cir. 2011) (mixed claims "create confusion as to when direct infringement occurs because they are directed both to systems and to actions performed by" users). Claim terms that lack antecedent basis are indefinite. *See, e.g., Allen Eng'g Corp. v. Bartell Indus., Inc*., 299 F.3d 1336, 1348-49 (Fed. Cir. 2002) (claim ending in the middle of a claim limitation was indefinite because it was "impossible to discern the scope of such a truncated limitation"). Furthermore, means-plus-function claims, which invoke 35 U.S.C. § 112 ¶ 6, may be invalid as indefinite where a patent owner has failed to disclose adequate corresponding structure linked to the recited claim functionality. *Noah Sys., Inc. v. Intuit Inc*., 675 F.3d 1302, 1311-12 (Fed. Cir. 2012).

Claims can also be invalid under 35 U.S.C. § 112 as set forth in *Williamson v. Citrix Online, LLC,* 792 F.3d 1339, 1348 (Fed. Cir. 2015). Section 112, paragraph 6 allows a patentee to express a claim element as a means for performing a specified function. 35 U.S.C. § 112, ¶ 6. For such claims, the written description of the patent must disclose with sufficient particularity the corresponding structure for performing the claimed function, and it must clearly link that structure

PATENT OWNER
Ex 2004

to the claimed function. *Ibormeith IP, LLC v. Mercedes-Benz USA, LLC,* 732 F.3d 1376, 1379 (Fed. Cir. 2013). Separately, "[i]f the function is performed by a general purpose computer or microprocessor, then the specification must also disclose the algorithm that the computer performs to accomplish that function." *Triton Tech of Texas, LLC v. Nintendo of Am., Inc.,* 753 F.3d 1375, 1378 (Fed. Cir. 2014). "Failure to disclose the corresponding algorithm for a computer-implemented means-plus-function term renders the claim indefinite." *Id.* An algorithm is a step-by-step procedure for performing a claimed function. *Id.*

These are merely examples and are not intended to be limiting. Defendants reserve all rights to amend their Invalidity Contentions under 35 U.S.C. § 112, including after an Asserted Claim is ultimately construed by the Court, in response to any interpretation of an Asserted Claim embodied in Plaintiff's infringement positions, and/or to account for any changes in the law concerning invalidity under 35 U.S.C. §112. Defendants additionally reserve the right to provide additional explanation and/or argument for their Invalidity Contentions under § 112, including, for example, based on expert testimony.

1. Group 1: U.S. Patent Nos. 7,593,034; 8,692,882; 9,485,471 and 9,912,914

The Asserted Claims of the Group 1 patents are invalid for lack of written description and enablement under pre-AIA 35 U.S.C. § 112 ¶ 1. Any claims having the limitations identified below, as well as all claims that directly or indirectly depend from those claims, are also invalid for lack of written description and enablement. The Group 1 patents fail to disclose the limitations in the specification and/or fail to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation.

PATENT OWNER
Ex 2004

- "protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write-protected portion and by indexing the write-protected portion as a second distinct file in the circular buffer" ('034 at claim 1);
- "recording the stream into available portions of a circular buffer as a first file using a digital video file format…indexing write protected portions of the buffer as separate, distinct files during the step of recording" ('034 at claim 12);
- "recording the video data into available portions of a circular buffer as a first file…indexing write protected portions of the buffer as separate, distinct files during the step of recording" ('882 at claim 12);
- "a recording facility that records the sensor data into available portions of a buffer in the local memory; and a protecting facility that responds to a signal to record the sensor data by designating a segment of the buffer as a write-protected segment and by indexing the write-protected segment as a file in the buffer, wherein the write-protected segment includes a pre-recorded subset recorded before the signal is received and a post-recorded subset to be recorded after the signal is received" ('471 at claim 1), to the extent that a buffer is interpreted as something other than a circular buffer;
- "a recording facility … that records at least some of the sensor data into an available portion of at least one buffer in the memory; and a protecting facility … that responds to a trigger signal to record the at least some of the sensor data by designating a segment of the at least one buffer as a write-protected segment and by storing the write-protected segment as at least one file in the at least one buffer"

PATENT OWNER
Ex 2004

('914 at claim 1), to the extent that a buffer is interpreted as something other than a circular buffer;

The Asserted Claims of the Group 1 patents are indefinite under pre-AIA 35 U.S.C. § 112 ¶ 2. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid as indefinite. By asserting that these limitations are indefinite, Defendants do not waive their rights to argue that the claims may also be anticipated or obvious under §§ 102 and 103. Claim construction has not yet begun, and Defendants reserve the right to add to, amend, and supplement this list to identify further indefinite limitations. The Asserted Claims of the Group 1 patents fail to particularly point out and distinctly claim the subject matter which the applicants regarded as the invention, and persons of ordinary skill in the art would not have understood what was being claimed, because the following limitations fail to inform with reasonable certainty of the boundaries of the claims.

- "a recording facility that continuously records the data stream into available portions of a circular buffer…a protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write- protected portion and by indexing the write-protected portion as a second distinct file in the circular buffer" ('034 at claim 1), record/records as used makes this claim indefinite;
- "protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write-protected portion and by indexing the write-protected portion as a second distinct file in the circular buffer" ('034 at claim 1);
- "recording the stream into available portions of a circular buffer as a first file using a digital video file format…indexing write protected portions of the buffer as separate, distinct files during the step of recording" ('034 at claim 12);

PATENT OWNER
Ex 2004

- "recording the video data into available portions of a circular buffer as a first file…indexing write protected portions of the buffer as separate, distinct files during the step of recording" ('882 at claim 12);
- "a recording facility that records the sensor data into available portions of a buffer in the local memory; and a protecting facility that responds to a signal to record the sensor data by designating a segment of the buffer as a write-protected segment and by indexing the write-protected segment as a file in the buffer, wherein the write-protected segment includes a pre-recorded subset recorded before the signal is received and a post-recorded subset to be recorded after the signal is received" ('471 at claim 1), to the extent that a buffer is interpreted as something other than an circular buffer, this claim is indefinite;
- "a recording facility … that records at least some of the sensor data into an available portion of at least one buffer in the memory; and a protecting facility … that responds to a trigger signal to record the at least some of the sensor data by designating a segment of the at least one buffer as a write-protected segment and by storing the write-protected segment as at least one file in the at least one buffer" ('914 at claim 1), to the extent that a buffer is interpreted as something other than an circular buffer, this claim is indefinite;
- "a recording facility … that records at least some of the sensor data into an available portion of at least one buffer in the memory; and a protecting facility … that responds to a trigger signal to record the at least some of the sensor data" ('914 at claim 1), record/records as used makes the claim indefinite;

PATENT OWNER
Ex 2004

Further, the following limitations may be construed as means-plus-function claim elements because they use nonce words that are not understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure. The limitations require the performance of various functions. The specification does not disclose adequate structure (or material or acts) and/or algorithms for performing the recited function(s). Without such disclosure, the claims fail to satisfy the requirements of 35 U.S.C. § 112.

- "a recording facility that continuously records the data stream into available portions of a circular buffer in the local memory as a first file using a digital video file format" ('034 at claim 1);
- "a protecting facility that responds to a signal to record by designating a segment of the circular buffer as a write-protected portion and by indexing the write-protected portion as a second distinct file in the circular buffer, wherein the segment includes a pre-recorded subset recorded before the signal is received and a post-recorded subset to be recorded after the signal is received" ('034 at claim 1);
- "a sending facility that uses the transmitter to wirelessly transmit the second file to a remote memory ('034 at claim 1);
- "a recording facility that records the sensor data into available portions of a buffer in the local memory" ('471 at claim 1);
- "a protecting facility that responds to a signal to record the sensor data by designating a segment of the buffer as a write-protected segment and by indexing the write-protected segment as a file in the buffer, wherein the write-protected segment includes a pre-recorded subset recorded before the signal is received and a post-recorded subset to be recorded after the signal is received" ('471 at claim

PATENT OWNER
Ex 2004

1);

- "a sending facility configured to transmit the file from the local memory to a remote memory" ('471 at claim 2);
- "a recording facility … that records at least some of the sensor data into an available portion of at least one buffer in the memory" ('914 at claim 1);
- "a protecting facility … that responds to a trigger signal to record the at least some of the sensor data by designating a segment of the at least one buffer as a write-protected segment and by storing the write-protected segment as at least one file in the at least one buffer" ('914 at claim 1);

2. Group 2: U.S. Patent No. 8,310,540

The Asserted Claim of the Group 2 patent is invalid for lack of written description and enablement under pre-AIA 35 U.S.C. § 112 ¶ 1. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid for lack of written description and enablement. The Group 2 patent fails to disclose the limitations in the specification and/or fails to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation.

- "a method of storing discrete segments of imaged data in a camera…providing a recorder coupled to the camera and having a memory; using multiple portions of the memory as a memory loop in which to record segments of the image data in approximately real time" ('540 at claim 1);
- "using multiple portions of the memory as a memory loop in which to record segments of the image data…protecting the multiple portions…from being overwritten by subsequent recording in the memory loop" ('540 at claim 1);

PATENT OWNER
Ex 2004

- "allowing the editing of the imaged data in protected multiple portions stored in the memory loop within the single file via a recorder control while recording additional segments of the image data in the memory loop within the single file."

The Asserted Claim of the Group 2 patent is indefinite under pre-AIA 35 U.S.C. § 112 ¶ 2. Any claims having these limitations, as well as all claims that directly or indirectly depend from those claims, are also invalid as indefinite. By asserting that these limitations are indefinite, Defendants do not waive their rights to argue that the claims may also be anticipated or obvious under §§ 102 and 103. Claim construction has not yet begun, and Defendants reserve the right to add to, amend, and supplement this list to identify further indefinite limitations. The Asserted Claim of the Group 2 patent fails to particularly point out and distinctly claim the subject matter which the applicants regarded as the invention, and persons of ordinary skill in the art would not have understood what was being claimed, because the following limitations fail to inform with reasonable certainty of the boundaries of the claims.

- "a method of storing discrete segments of imaged data in a camera…providing a recorder coupled to the camera and having a memory; using multiple portions of the memory as a memory loop in which to record segments of the image data in approximately real time" ('540 at claim 1), storing images in a camera and in memory connected to the camera make the claim indefinite.
- "using multiple portions of the memory as a memory loop in which to record segments of the image data…protecting the multiple portions…from being overwritten by subsequent recording in the memory loop" ('540 at claim 1), "multiple portions" as used makes the claim indefinite.

PATENT OWNER
Ex 2004

- "allowing the editing of the imaged data in protected multiple portions stored in the memory loop within the single file via a recorder control while recording additional segments of the image data in the memory loop within the single file" ('540 at claim 1), "editing of the imaged data" as used makes the claim indefinite.

3. Group 3: U.S. Patent No. 8,928,752

The Asserted Claim of the Group 3 patent is invalid for lack of written description and enablement under pre-AIA 35 U.S.C. § 112 ¶ 1. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid for lack of written description and enablement. The Group 3 patent fails to disclose the limitations in the specification and/or fails to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation.

- "a camera that converts images into first and second data streams… records the first data stream in the buffer; responds to a first signal by protecting a recently used segment of the buffer storing at least a portion of the first data stream…while at the same time continuously recording the first data stream as the second data stream" ('752 at claim 1).

The Asserted Claim of the Group 3 patent is indefinite under pre-AIA 35 U.S.C. § 112 ¶ 2. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid as indefinite. By asserting that these limitations are indefinite, Defendants do not waive their rights to argue that the claims may also be anticipated or obvious under §§ 102 and 103. Claim construction has not yet begun, and Defendants reserve the right to add to, amend, and supplement this list to identify further indefinite limitations. The Asserted Claim of the Group 3 patent fails to particularly point out and distinctly claim the subject

PATENT OWNER
Ex 2004

matter which the applicants regarded as the invention, and persons of ordinary skill in the art would not have understood what was being claimed, because the following limitations fail to inform with reasonable certainty of the boundaries of the claims.

- "a camera that converts images into first and second data streams… records the first data stream in the buffer; responds to a first signal by protecting a recently used segment of the buffer storing at least a portion of the first data stream…while at the same time continuously recording the first data stream as the second data stream" ('752 at claim 1), "first and second data streams" as used makes the claim indefinite.

Further the following limitations may be construed as means-plus-function claim elements because they use nonce words that are not understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure. The limitations require the performance of various functions. The specification does not disclose adequate structure (or material or acts) and/or algorithms for performing the recited function(s). Without such disclosure, the claims fail satisfy the requirements of 35 U.S.C. § 112.

- "hardware that executes an instruction set that utilizes an area of the memory as a circular buffer, records the first data stream in the buffer; responds to a first signal by protecting a recently used segment of the buffer storing at least a portion of the first data stream corresponding to a duration of time prior to the first signal, while at the same time continuously recording the first data stream as the second data stream in an unprotected segment of the buffer, without overwriting the protected segment; and responds to a second signal received after the first signal by increasing the duration of the protected segment of the buffer prior to the first signal" ('752 at claim 1).

PATENT OWNER
Ex 2004

4. Group 4: U.S. Patent Nos. 10,523,901 and 10,965,910

The Asserted Claims of the Group 4 patents are invalid for lack of written description and enablement under pre-AIA 35 U.S.C. § 112 ¶ 1. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid for lack of written description and enablement. The Group 4 patents fail to disclose the limitations in the specification and/or fail to describe the manner and process of making and using the invention so as to enable a person of skill in the art to make and use the full scope of the invention without undue experimentation.

- "automatically overwrite portions of the sensor data that were recorded in the first memory that were not designated for saving" ('901 at claim 1)
- "upon reaching at least one of the first portion and the second portion while continuing to record the sensor data in the at least one memory, excluding from overwriting the at least one of the first portion and second portion" ('910 at claim 1)

The Asserted Claims of the Group 4 patent are indefinite under pre-AIA 35 U.S.C. § 112 ¶ 2. Any claims having the limitations identified herein, as well as all claims that directly or indirectly depend from those claims, are also invalid as indefinite. By asserting that these limitations are indefinite, Defendants do not waive their rights to argue that the claims may also be anticipated or obvious under §§ 102 and 103. Claim construction has not yet begun, and Defendants reserve the right to add to, amend, and supplement this list to identify further indefinite limitations. The Asserted Claims of the Group 4 patents fail to particularly point out and distinctly claim the subject matter which the applicants regarded as the invention, and persons of ordinary skill in the art would not have understood what was being claimed, because the following limitations fail to inform with reasonable certainty of the boundaries of the claims.

PATENT OWNER
Ex 2004

- "automatically overwrite portions of the sensor data that were recorded in the first memory that were not designated for saving" ('901 at claim 1), to the extent that the first memory is interpreted as something other than implementing an circular buffer, this claim is indefinite;
- "upon reaching at least one of the first portion and the second portion while continuing to record the sensor data in the at least one memory, excluding from overwriting the at least one of the first portion and second portion" ('910 at claim 1), to the extent that the first memory is interpreted as something other than implementing an circular buffer, this claim is indefinite;

Further the following limitations may be construed as means-plus-function claim elements because they use nonce words that are not understood by persons of ordinary skill in the art to have a sufficiently definite meaning as the name for structure. The limitations require the performance of various functions. The specification does not disclose adequate structure (or material or acts) and/or algorithms for performing the recited function(s). Without such disclosure, the claims fail satisfy the requirements of 35 U.S.C. § 112.

- "a computer processor configured to: record the sensor data in the first memory" ('901 at claim 1);
- "a computer processor configured to:…in response to a first trigger signal, designate for saving a first portion of the sensor data that was captured prior to occurrence of the first trigger signal, wherein the portion of the sensor data occupies a portion of the first memory that is less than the entirety of the first memory and corresponds to a length of time prior to the first trigger signal" ('901 at claim 1);

PATENT OWNER
Ex 2004

- "a computer processor configured to:…contiguously continuing to record the sensor data in the first memory while the first portion of the sensor data is designated for saving" ('901 at claim 1);
- "a computer processor configured to:…in response to a subsequent second trigger signal, designate for saving a second portion where in the second portion occupies less than the remaining entirety of the first memory not designated for saving and corresponds to a length of time prior to the second trigger signal" ('901 at claim 1);
- "a computer processor configured to:…automatically overwrite portions of the sensor data that were recorded in the first memory that were not designated for saving" ('901 at claim 1);
- "a computer processor configured to: record sensor data obtained by the sensor in the at least one memory; in response to a first trigger signal, designate for write-protecting a first portion of the sensor data that was captured prior to occurrence of the first trigger signal, wherein the first portion of the sensor data occupies a portion of the at least one memory that is less than the entirety of the at least one memory and corresponds to a length of time prior to the first trigger signal" ('910 at claim 1);
- "a computer processor configured to:…continuing to record the sensor data in the at least one memory while the first portion of the sensor data is designated for write-protecting" ('910 at claim 1);
- "a computer processor configured to:…in response to a subsequent second trigger signal, designate for write-protecting a second portion wherein the second portion occupies less than the remaining entirety of the at least one memory not designated

PATENT OWNER
Ex 2004

for write-protecting and corresponds to a length of time prior to the second trigger signal" ('910 at claim 1);

- "a computer processor configured to:…upon reaching at least one of the first portion and the second portion while continuing to record the sensor data in the at least one memory, excluding from overwriting the at least one of the first portion and second portion" ('910 at claim 1).

IV. P.R. 3-4 DISCLOSURES AND CONTENTIONS

A. P.R. 3-4(a) Disclosures

Pursuant to P.R. 3-4(a), on February 9, 2024, Defendants produced technical documentation within their possession, custody, and control showing the operation of aspects or elements of the Accused Instrumentalities charted by Plaintiff in its Amended Infringement Contentions. On February 9, 2024, Defendants further made source code available for inspection on a source code review computer at the offices of Jones Day, 2727 N Harwood St, Dallas, TX 75201, which can be accessed according to the procedures outlined in the Protective Order governing the case. Defendants reserve the right to supplement these disclosures with additional documentation.

B. P.R. 3-4(b) Disclosures

In accordance with P.R. 3-4(b), Defendants are producing a copy of all prior art references identified in these Invalidity Contentions. Defendants are also producing prior art references concerning prior art systems and methods. Defendants are also making available for inspection, with reasonable notice, multiple WatchGuard DV-1 physical products and one Deja View Camwear 100 physical product at the offices of Jones Day, 2727 N Harwood St, Dallas, TX 75201. These prior art references are cited herein and support the contentions presented. Defendants' search for prior art references, additional documentation, and/or corroborating evidence

PATENT OWNER
Ex 2004

concerning prior art apparatuses and methods is ongoing. Accordingly, Defendants reserve the right to supplement their production, as provided by the local rules, as additional prior art references, additional documentation, and/or corroborating evidence concerning prior art documents/apparatuses, and methods are obtained during the course of discovery.

V. RESERVATIONS

A. General Reservations

Defendants reserve the right, to the extent permitted by the Court and the applicable statutes and rules, to supplement and/or amend these Invalidity Contentions based on prior art currently known to Plaintiff and prior art identified or provided to Plaintiff by Defendants or any third parties.

Consistent with P.R. 3-6, Defendants reserve the right to seek to amend these Invalidity Contentions. The information and documents that Defendants produce are provisional and subject to further revision. Defendants reserve the right to seek to amend and/or supplement these Invalidity Contentions and its subsequent document production should Plaintiff: 1) provide any information that it failed to provide in its P.R. 3-1 and 3-2 disclosures; 2) amend its P.R. 3-1 or 3-2 disclosures in any way; or 3) attempt to rely upon any information at trial, in a hearing or during a deposition which it should have provided but failed to provide in its P.R. 3-1 and 3-2 disclosures.

Defendants provide the information below and in the accompanying claim charts and document production for the sole purpose of complying with P.R. 3-3 and 3-4. The information provided below, in the accompanying claim charts, and production of documents shall not be deemed an admission or agreement regarding (a) the scope of any claims, (b) the proper construction of those claims or any terms contained therein, and/or (c) Stellar's infringement theories or mappings in its Infringement Contentions. For example, Stellar's Infringement Contentions appear to assign constructions to indefinite claim language, to pursue overly broad claim constructions in an effort to assert infringement where none exists, and to accuse products

PATENT OWNER
Ex 2004

and features that do not infringe the Asserted Claims. Nothing contained in these Invalidity Contentions, including the accompanying claim charts and document production, should be understood or deemed to be an express or implied admission or contention with respect to the proper construction of any terms in the Asserted Claims, that any claim limitation is definite or otherwise amenable to construction, or with respect to the alleged infringement of any claim.

Defendants do not infringe any of the Asserted Claims. Defendants inclusion of any prior art versions of Defendants' accused products or their accused features or components in these contentions is not an admission that any accused products infringe any of the asserted claims. Instead, to the extent Defendants have done so, the "century-old axiom of patent law" is applicable "that a product 'which would literally infringe if later in time anticipates if earlier.'" *Upsher-Smith Labs., Inc. v. Pamlab, L.L.C.*, 412 F.3d 1319, 1322 (Fed. Cir. 2005) (citations omitted); *accord Peters v. Active Mfg. Co.* 129 U.S. 530, 537(1889) ("That which infringes, if later, would anticipate, if earlier."). Accordingly, to the extent that the allegedly-infringing features or components accused by Stellar are found in prior art versions of any of Defendants' products, then the asserted claims are anticipated or obvious as a result.

Furthermore, Stellar's Infringement Contentions are deficient, lack detail, and do not sufficiently address all claim limitations of the Asserted Claims. Nothing herein shall be deemed a concession regarding the sufficiency of Stellar's Infringement Contentions and Defendants reserve all rights thereof.

B. Ongoing Discovery and Disclosures

Because only limited discovery has occurred and Plaintiff's responses to Defendants' interrogatories remain deficient, Defendants reserve the right to seek to revise, amend, and/or supplement the information provided herein, including identifying, charting, and relying on additional references, consistent with the Patent Rules and the Federal Rules of Civil Procedure.

PATENT OWNER
Ex 2004

Fact discovery is ongoing, and expert discovery has not yet begun. Some or all of the items of prior art identified herein or otherwise identified in the prior art publications, patents or other documents identified by Defendants have been and will be the subject of continuing investigation and discovery, including potentially third party discovery as well as expert discovery.

Similarly, Defendants have not yet had the opportunity to take any depositions of the inventor named on the face of the Asserted Patents or other persons having relevant information. Defendants reserve the right to seek to revise, amend or supplement these contentions pursuant to Federal Rule of Civil Procedure 26(e) and the Orders of record in this matter, to the extent appropriate in light of further investigation and discovery regarding the defenses, the review and analysis of expert witnesses, or supplemental contentions by Plaintiff.

C. Claim Construction

The Court has not construed the Asserted Claims. Defendants map the prior art references to the Asserted Claims based on Plaintiff's apparent constructions, to the extent understood, of the Asserted Claims as advanced in Plaintiff's Infringement Contentions. However, nothing stated in this document or accompanying claim charts should be treated as an admission or suggestion that Plaintiff's apparent claim constructions are correct, or that any claim terms of the Asserted Claims are not invalid under 35 U.S.C. § 112 for being indefinite, failing to satisfy the written description requirement, or failing to satisfy the enablement requirement. In fact, Defendants specifically deny that Plaintiff's apparent claim constructions are proper and that the Asserted Claims are definite.

Depending on the Court's construction of the Asserted Claims of the Asserted Patents, and/or positions that Plaintiff or its expert witness(es) may take concerning claim interpretation, infringement, and/or invalidity issues, the asserted prior art references may be of greater or lesser relevance. Given this uncertainty, the charts may reflect alternative applications of the prior art against the Asserted Claims. Thus, no chart or position taken by Defendants should be construed

PATENT OWNER
Ex 2004

as an admission or a waiver of any particular construction of any claim term. Defendants also reserve the right to challenge any of the claim terms under 35 U.S.C. § 112, including by arguing that they are indefinite, not supported by the written description, and/or not enabled, notwithstanding positions taken in the attached charts.

D. Plaintiff's Infringement Contentions

Plaintiff's disclosures under P.R. 3-1 and 3-2 are deficient in numerous respects as outlined in Defendants' January 19, 2024 email. Although Plaintiff amended its contentions, they remain deficient. For example, Plaintiff has failed to specifically identify where each element of each claim is found within each Accused Instrumentality as required by P.R. 3-1. Because such deficiencies may lead to further grounds for invalidity, Defendants specifically reserve the right to seek to modify, amend, or supplement its contentions as Plaintiff modifies, amends, or supplements its disclosures under P.R. 3-1, 3-2, and/or 3-6, and/or produces documents in discovery.

Additionally, Plaintiff has presented no substantive contentions for indirect infringement, i.e., active inducement or contributory infringement. Plaintiff's response to Defendants' second set of interrogatories regarding indirect infringement provides no substance. Plaintiff has not, for example, provided detailed contentions that identify how Defendants allegedly induce direct infringement of the Asserted Patents by a third party, or how Defendants allegedly contribute to the infringement of the Asserted Patents by a third party. Nor has Plaintiff provided detailed contentions of any alleged infringement under the doctrine of equivalents. Plaintiff's response to Defendants' second set of interrogatories regarding the doctrine of equivalents provides no theories. If Plaintiff is permitted to provide this information, Defendants will seek to amend and supplement these Invalidity Contentions as appropriate.

PATENT OWNER
Ex 2004

E. Effective Dates

Plaintiff asserted under P.R. 3-1(e) that the Asserted Claims of the Asserted Patents are entitled to the following priority dates:

U.S. Patent No.	Priority Date
7,593,034	June 29, 2007
8,310,540	June 29, 2007
8,692,882	June 29, 2007
8,928,752	August 28, 2007
9,485,471	June 29, 2007
9,912,914	June 29, 2007
10,523,901	June 29, 2007
10,965,910	June 29, 2007

Under P.R. 3-2(b), Plaintiff did not produce any documents evidencing or corroborating dates for conception or reduction to practice of the claimed alleged inventions. Plaintiff also failed to produce any evidence of reasonable diligence starting with any alleged conception of the claimed alleged inventions. If Plaintiff is permitted to provide this information, Defendants will seek to amend and supplement these Invalidity Contentions as appropriate.

F. The Intrinsic Record

Defendants further reserve the right to rely upon applicable information and prior art cited in the file histories of the Asserted Patents and any related U.S. and foreign patent applications as invalidating references or to show the state of the art. Defendants further reserve the right to rely on the patent applicants' admissions concerning the scope of the prior art relevant to the Asserted Patents found in, *inter alia*: the Asserted Patents, the prosecution histories for the Asserted Patents and any related patents and/or patent applications or reexaminations; any deposition testimony of the named inventor of the Asserted Patents; and the papers filed and any evidence submitted by Plaintiff in connection with this litigation.

PATENT OWNER
Ex 2004

G. Rebuttal Evidence

Prior art not included in these Invalidity Contentions, whether known or not known to Defendants, may become relevant. In particular, Defendants are currently unaware of the extent, if any, to which Plaintiff will contend that limitations of the Asserted Claims of the Asserted Patents are not disclosed in the prior art identified herein. To the extent that such an issue arises, Defendants reserve the right to identify other references that would show or render obvious the allegedly missing limitation(s) or the disclosed device or method.

H. Contextual Evidence

Defendants' claim charts cite particular teachings and disclosures of the prior art as applied to the limitation or element of each of the Asserted Claims. However, persons having ordinary skill in the art generally may view an item of prior art in the context of his or her experience and training, other publications, literature, products, and understanding. As such, the cited portions are only examples, and Defendants reserve the right to rely on uncited portions of the prior art references and on other publications and expert testimony as aids in understanding and interpreting the cited portions, as providing context thereto, and as additional evidence that the prior art discloses a claim limitation or the claimed subject matter as a whole. Defendants further reserve the right to rely on uncited portions of the prior art references, other publications, and testimony, including expert testimony, to establish bases for combinations of certain cited references that render the Asserted Claims obvious. The references discussed in the claim charts may disclose the elements of the Asserted Claims explicitly and/or inherently, and/or they may be relied upon to show the state of the art in the relevant time frame. The suggested obviousness combinations are provided in the alternative to anticipation contentions and are not to be construed to suggest that any reference included in the combinations is not by itself anticipatory.

PATENT OWNER
Ex 2004

I. No Patentable Weight

Defendants reserve the right to argue that various portions of the Asserted Claims, such as an intended use or result, non-functional descriptive material, and certain preamble language, are entitled to no patentable weight. Mapping of a portion of an Asserted Claim to a prior art reference does not represent or admit that such portion of the claim is entitled to patentable weight when comparing the claimed subject matter to the prior art. Nor do references herein to claim language as a "limitation" or "element" admit that the claim language has patentable weight.

Dated: February 27, 2024

/s/ *Christopher A. Buxton*

Hilda C. Galvan (State Bar No. 00787512)
hcgalvan@jonesday.com
Christopher A. Buxton (State Bar No. 24116154)
cbuxton@jonesday.com
JONES DAY
2727 N. Harwood St., Suite 500
Dallas, TX 75201
Telephone: (214) 220-3939
Facsimile: (214) 969-5100

John A. Marlott
jamarlott@jonesday.com
Kristina N. Hendricks
khendricks@jonesday.com
JONES DAY
110 N. Wacker Drive, Suite 4800
Chicago, IL 60606
Telephone: (312) 782-3939
Facsimile: (312) 782-8585

Attorneys for Defendants Motorola Solutions, Inc. and Watchguard Video, Inc.

PATENT OWNER
Ex 2004

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing document was served on counsel of record for Plaintiff via electronic mail on February 27, 2024:

/s/ *Christopher A. Buxton*
Christopher A. Buxton