

# US Patent & Trademark Office

## Patent Public Search | Text View

---

United States Patent	12386634
Kind Code	B2
Date of Patent	August 12, 2025
Inventor(s)	Wagner; Daniel J. et al.

---

### Systems and methods for distributed control

---

#### Abstract

Systems involving distributed control functions are described herein. Each member or device within the system has responsibility for controlling part of the system's behavior, and includes logic to determine what action, if any, will follow as a response to determining information or receiving information from other members or devices within the system. A change of status of one member of a system may provide a basis for action by another member of the system. Status may be the result of sensing a condition of the environment, sensing the condition of a component, receiving the output of a conventional sensor, and/or sensing the condition of a link between components. In some embodiments, action taken by a member of the system may include collecting data during law enforcement activities.

---

**Inventors:** Wagner; Daniel J. (Scottsdale, AZ), Hanchett; Mark A. (Mesa, AZ), Kloc; Aaron J. (Scottsdale, AZ), Conant; Tyler J. (Seattle, WA)

**Applicant:** Axon Enterprise, Inc. (Scottsdale, AZ)

**Family ID:** 1000008749519

**Assignee:** Axon Enterprise, Inc. (Scottsdale, AZ)

**Appl. No.:** 18/440850

**Filed:** February 13, 2024

#### Prior Publication Data

Document Identifier	Publication Date
US 20240184594 A1	Jun. 06, 2024

#### Related U.S. Application Data

continuation parent-doc US 18149632 20230103 US 11900130 child-doc US 18440850  
continuation parent-doc US 17157720 20210125 US 11544078 20230103 child-doc US 18149632  
continuation parent-doc US 16508105 20190710 US 10901754 20210126 child-doc US 17157720

continuation parent-doc US 14918392 20151020 US 10409621 20190910 child-doc US 16508105  
us-provisional-application US 62192466 20150714  
us-provisional-application US 62066083 20141020

---

**Publication Classification**

**Int. Cl.:** **G06F9/445** (20180101); **G06F13/10** (20060101); **H04N21/422** (20110101);  
**H04N21/436** (20110101); **H04N21/4363** (20110101); **H04W4/80** (20180101)

**U.S. Cl.:**

**CPC** **G06F9/44505** (20130101); **G06F13/102** (20130101); **H04N21/422** (20130101);  
**H04N21/43615** (20130101); **H04N21/43637** (20130101); **H04W4/80** (20180201);  
Y02D10/00 (20180101)

**Field of Classification Search**

**CPC:** G06F (9/44505); G06F (13/102); H04N (21/43615); H04N (21/43637)

**USPC:** 710/8; 710/10; 710/15; 710/62; 370/389; 369/27.01

---

**References Cited**

**U.S. PATENT DOCUMENTS**

Patent No.	Issued Date	Patentee Name	U.S. Cl.	CPC
3467771	12/1968	Polack	N/A	N/A
4326221	12/1981	Mallos	N/A	N/A
4409670	12/1982	Herndon	N/A	N/A
4786966	12/1987	Hanson	N/A	N/A
4789904	12/1987	Peterson	N/A	N/A
4815757	12/1988	Hamilton	N/A	N/A
4831438	12/1988	Bellman	N/A	N/A
4863130	12/1988	Marks	N/A	N/A
4910591	12/1989	Petrosian	N/A	N/A
4926495	12/1989	Comroe	N/A	N/A
4949186	12/1989	Peterson	N/A	N/A
4978473	12/1989	Kuroda et al.	N/A	N/A
5012335	12/1990	Cohodar	N/A	N/A
5027104	12/1990	Reid	N/A	N/A
5096287	12/1991	Kakinami	N/A	N/A
5111289	12/1991	Lucas	N/A	N/A
5289321	12/1993	Secor	N/A	N/A
5381155	12/1994	Gerber	N/A	N/A
5400185	12/1994	Scerbo	N/A	N/A
5420725	12/1994	Hsu	N/A	N/A
5446659	12/1994	Yamawaki	N/A	N/A
5448320	12/1994	Sakai	N/A	N/A
5453939	12/1994	Hoffman	N/A	N/A
5473729	12/1994	Bryant	N/A	N/A

5479149	12/1994	Pike	N/A	N/A
5491464	12/1995	Carter	N/A	N/A
5497419	12/1995	Hill	N/A	N/A
5526133	12/1995	Paff	N/A	N/A
5585798	12/1995	Yoshioka	N/A	N/A
5636122	12/1996	Shah	N/A	N/A
5642285	12/1996	Woo	N/A	N/A
5659289	12/1996	Zonkoski	N/A	N/A
5668675	12/1996	Fredricks	N/A	N/A
D385209	12/1996	Mercer	N/A	N/A
5689442	12/1996	Swanson	N/A	N/A
5691242	12/1996	Nomi et al.	N/A	N/A
5729016	12/1997	Klapper	N/A	N/A
5742336	12/1997	Lee	N/A	N/A
5752632	12/1997	Sanderson	N/A	N/A
5781243	12/1997	Kormos	N/A	N/A
5798458	12/1997	Monroe	N/A	N/A
5815093	12/1997	Kikinis	N/A	N/A
5834676	12/1997	Elliot	N/A	N/A
5850613	12/1997	Bullecks	N/A	N/A
5878283	12/1998	House	N/A	N/A
5886739	12/1998	Winningstad	N/A	N/A
5890079	12/1998	Levine	N/A	N/A
5926210	12/1998	Hackett	N/A	N/A
5978017	12/1998	Tino	N/A	N/A
5983161	12/1998	Lemelson	N/A	N/A
5996023	12/1998	Winter	N/A	N/A
6008841	12/1998	Charlson	N/A	N/A
6028528	12/1999	Lorenzetti	N/A	N/A
6037977	12/1999	Peterson	N/A	N/A
6052068	12/1999	Price	N/A	N/A
6097429	12/1999	Seeley	N/A	N/A
6100806	12/1999	Gaukel	N/A	N/A
6121881	12/1999	Bieback	N/A	N/A
6141609	12/1999	Herdeg	N/A	N/A
6163338	12/1999	Johnson	N/A	N/A
6175300	12/2000	Kendrick	N/A	N/A
6215518	12/2000	Watkins	N/A	N/A
6272781	12/2000	Resnick	N/A	N/A
6292213	12/2000	Jones	N/A	N/A
6298290	12/2000	Abe	N/A	N/A
6310541	12/2000	Atkins	N/A	N/A
6314364	12/2000	Nakamura	N/A	N/A
6326900	12/2000	Deline	N/A	N/A
6333694	12/2000	Peirce	N/A	N/A
6333759	12/2000	Mazzilli	N/A	N/A
6370475	12/2001	Breed	N/A	N/A
RE37709	12/2001	Dukek	N/A	N/A
6389340	12/2001	Rayner	N/A	N/A
6396403	12/2001	Haner	N/A	N/A

6405112	12/2001	Rayner	N/A	N/A
6411874	12/2001	Morgan	N/A	N/A
6449540	12/2001	Rayner	N/A	N/A
6452572	12/2001	Fan	N/A	N/A
6518881	12/2002	Monroe	N/A	N/A
6525672	12/2002	Chainer	N/A	N/A
6546119	12/2002	Ciulli	N/A	N/A
6560463	12/2002	Santhoff	N/A	N/A
6681195	12/2003	Poland	N/A	N/A
6697103	12/2003	Fernandez	N/A	N/A
6704044	12/2003	Foster	N/A	N/A
6718239	12/2003	Rayner	N/A	N/A
6727816	12/2003	Helgeson	N/A	N/A
6748792	12/2003	Freund	N/A	N/A
6784833	12/2003	Evans	N/A	N/A
6795111	12/2003	Mazzilli	N/A	N/A
RE38626	12/2003	Kielland	N/A	N/A
6823621	12/2003	Gotfried	N/A	N/A
6831556	12/2003	Boykin	N/A	N/A
6856873	12/2004	Breed	N/A	N/A
6894717	12/2004	Bakewell	N/A	N/A
6950122	12/2004	Mirabile	N/A	N/A
6955484	12/2004	Woodman	N/A	N/A
6970183	12/2004	Monroe	N/A	N/A
7012632	12/2005	Freeman	N/A	N/A
7023913	12/2005	Monroe	N/A	N/A
7034683	12/2005	Ghazarian	N/A	N/A
7038590	12/2005	Hoffman	N/A	N/A
7106835	12/2005	Saalsaa	N/A	N/A
D529528	12/2005	Ross	N/A	N/A
7116357	12/2005	Oya	N/A	N/A
7119832	12/2005	Blanco	N/A	N/A
7126472	12/2005	Kraus	N/A	N/A
7147155	12/2005	Weekes	N/A	N/A
7180407	12/2006	Guo	N/A	N/A
7190882	12/2006	Gammenthaler	N/A	N/A
7273321	12/2006	Woodman	N/A	N/A
7298964	12/2006	Ishikawa	N/A	N/A
7359553	12/2007	Wendt	N/A	N/A
7371021	12/2007	Ross	N/A	N/A
7432972	12/2007	Storm	N/A	N/A
7436955	12/2007	Yan	N/A	N/A
7448996	12/2007	Khanuja	N/A	N/A
7456875	12/2007	Kashiwa	N/A	N/A
7458736	12/2007	Woodman	N/A	N/A
7463280	12/2007	Steuart	N/A	N/A
7488996	12/2008	Chang	N/A	N/A
7496140	12/2008	Winningstad	N/A	N/A
7500794	12/2008	Clark	N/A	N/A
7508941	12/2008	O'Toole	N/A	N/A

7519271	12/2008	Strub	N/A	N/A
7536457	12/2008	Miller	N/A	N/A
7539533	12/2008	Tran	N/A	N/A
7561037	12/2008	Monroe	N/A	N/A
7576800	12/2008	Swain	N/A	N/A
7593034	12/2008	Dekeyser	N/A	N/A
7599942	12/2008	Mohamad	N/A	N/A
7602301	12/2008	Stirling	N/A	N/A
7659827	12/2009	Gunderson	N/A	N/A
7680947	12/2009	Nicholl	N/A	N/A
7685428	12/2009	Piersol	N/A	N/A
7697035	12/2009	Suber	N/A	N/A
7711154	12/2009	Danielson	N/A	N/A
D616901	12/2009	Ward	N/A	N/A
7742625	12/2009	Pilu	N/A	N/A
7756602	12/2009	Koempel	N/A	N/A
7804426	12/2009	Etcheson	N/A	N/A
7806525	12/2009	Howell	N/A	N/A
7853944	12/2009	Choe	N/A	N/A
7881604	12/2010	Kurane	N/A	N/A
8005937	12/2010	Wesley	N/A	N/A
D644679	12/2010	Woodman	N/A	N/A
8014597	12/2010	Newman	N/A	N/A
D646313	12/2010	Woodman	N/A	N/A
8063786	12/2010	Manotas	N/A	N/A
8063934	12/2010	Donato	N/A	N/A
8077029	12/2010	Daniel	N/A	N/A
8079501	12/2010	Woodman	N/A	N/A
8081214	12/2010	Vanman	N/A	N/A
D657808	12/2011	Woodman	N/A	N/A
8150248	12/2011	Woodman	N/A	N/A
8175314	12/2011	Webster	N/A	N/A
8176093	12/2011	Mohamad	N/A	N/A
8228364	12/2011	Cilia	N/A	N/A
8269617	12/2011	Cook	N/A	N/A
8314708	12/2011	Gunderson	N/A	N/A
8325270	12/2011	Woodman	N/A	N/A
D674428	12/2012	Woodman	N/A	N/A
D674429	12/2012	Woodman	N/A	N/A
8345969	12/2012	Newman	N/A	N/A
8350907	12/2012	Blanco	N/A	N/A
8351447	12/2012	Habuto	N/A	N/A
8373567	12/2012	Denson	N/A	N/A
8384539	12/2012	Denny	N/A	N/A
8433763	12/2012	Anderson	N/A	N/A
8451903	12/2012	Kamisli et al.	N/A	N/A
8456293	12/2012	Trundle	N/A	N/A
8472061	12/2012	Miyazawa	N/A	N/A
8479009	12/2012	Bennett	N/A	N/A
8487995	12/2012	Vanman	N/A	N/A

8503972	12/2012	Haler	N/A	N/A
8508353	12/2012	Cook	N/A	N/A
8520069	12/2012	Haler	N/A	N/A
D689537	12/2012	Campbell	N/A	N/A
8538143	12/2012	Newman	N/A	N/A
D692472	12/2012	Samuels	N/A	N/A
8571895	12/2012	Medina	N/A	N/A
8606073	12/2012	Woodman	N/A	N/A
8606492	12/2012	Botnen	N/A	N/A
8629977	12/2013	Phillips	N/A	N/A
8638392	12/2013	Woodman	N/A	N/A
D699275	12/2013	Samuels	N/A	N/A
D699276	12/2013	Samuels	N/A	N/A
D699277	12/2013	Samuels	N/A	N/A
8644629	12/2013	Newman	N/A	N/A
8676728	12/2013	Richardson	N/A	N/A
D702276	12/2013	Woodman	N/A	N/A
D702277	12/2013	Woodman	N/A	N/A
D702747	12/2013	Woodman	N/A	N/A
D702754	12/2013	Bould	N/A	N/A
D702755	12/2013	Bould	N/A	N/A
8700946	12/2013	Reddy	N/A	N/A
8707758	12/2013	Keays	N/A	N/A
8718390	12/2013	Newman	N/A	N/A
8725462	12/2013	Jain	N/A	N/A
8744642	12/2013	Neman-Nasser	N/A	N/A
8781292	12/2013	Ross	N/A	N/A
8827869	12/2013	Ellis	N/A	N/A
8836784	12/2013	Erhardt	N/A	N/A
8837928	12/2013	Clearman	N/A	N/A
8849501	12/2013	Cook	N/A	N/A
D715347	12/2013	Troxel	N/A	N/A
D715846	12/2013	Troxel	N/A	N/A
8854199	12/2013	Cook	N/A	N/A
8854465	12/2013	McIntyre	N/A	N/A
8857775	12/2013	Clearman	N/A	N/A
8863208	12/2013	Calvert	N/A	N/A
8867886	12/2013	Feinson	N/A	N/A
8872916	12/2013	Alberth	N/A	N/A
8872940	12/2013	Marman	N/A	N/A
8887208	12/2013	Merrit	N/A	N/A
8893010	12/2013	Brin	N/A	N/A
8896432	12/2013	Kang	N/A	N/A
8897506	12/2013	Myers	N/A	N/A
8911162	12/2013	Kuehl	N/A	N/A
8914472	12/2013	Lee	N/A	N/A
8923998	12/2013	Ellis	N/A	N/A
8928752	12/2014	Dekeyser	N/A	N/A
8930072	12/2014	Lambert	N/A	N/A
8934015	12/2014	Chi	N/A	N/A

8947262	12/2014	Rauscher	N/A	N/A
8964014	12/2014	Ollila	N/A	N/A
8989914	12/2014	Nemat-Nasser	N/A	N/A
8996234	12/2014	Tamari	N/A	N/A
9041803	12/2014	Chen	N/A	N/A
9143670	12/2014	Cilia	N/A	N/A
9148585	12/2014	Cragun	N/A	N/A
9183679	12/2014	Plante	N/A	N/A
9204084	12/2014	Kim	N/A	N/A
9214191	12/2014	Guzik	N/A	N/A
9237262	12/2015	Phillips	N/A	N/A
9253452	12/2015	Ross	N/A	N/A
9599440	12/2016	Gish et al.	N/A	N/A
2002/0013517	12/2001	West	N/A	N/A
2002/0032510	12/2001	Turnbull	N/A	N/A
2002/0044065	12/2001	Quist	N/A	N/A
2002/0049881	12/2001	Sugimura	N/A	N/A
2002/0084130	12/2001	Der Ghazarian	N/A	N/A
2002/0131768	12/2001	Gammenthaler	N/A	N/A
2002/0135336	12/2001	Zhou	N/A	N/A
2002/0159434	12/2001	Gosior	N/A	N/A
2002/0191952	12/2001	Fiore	N/A	N/A
2003/0040917	12/2002	Fiedler	N/A	N/A
2003/0080878	12/2002	Kirmuss	N/A	N/A
2003/0081121	12/2002	Kirmuss	N/A	N/A
2003/0081123	12/2002	Rupe	N/A	N/A
2003/0090572	12/2002	Belz	N/A	N/A
2003/0106917	12/2002	Shetler et al.	N/A	N/A
2003/0151663	12/2002	Lorenzetti	N/A	N/A
2003/0173408	12/2002	Mosher	N/A	N/A
2003/0184649	12/2002	Mann	N/A	N/A
2003/0215010	12/2002	Kashiwa	N/A	N/A
2003/0215114	12/2002	Kyle	N/A	N/A
2003/0222982	12/2002	Hamdan	N/A	N/A
2004/0013192	12/2003	Kennedy	N/A	N/A
2004/0033058	12/2003	Reich	N/A	N/A
2004/0043765	12/2003	Tolhurst	N/A	N/A
2004/0061780	12/2003	Huffman	N/A	N/A
2004/0088413	12/2003	Bhogi et al.	N/A	N/A
2004/0145457	12/2003	Schofield	N/A	N/A
2004/0146272	12/2003	Kessel	N/A	N/A
2004/0164896	12/2003	Evans	N/A	N/A
2004/0168002	12/2003	Accarie	N/A	N/A
2004/0199785	12/2003	Pederson	N/A	N/A
2004/0208493	12/2003	Kashiwa	N/A	N/A
2004/0223054	12/2003	Rotholtz	N/A	N/A
2004/0263609	12/2003	Otsuki	N/A	N/A
2005/0030151	12/2004	Singh	N/A	N/A
2005/0035161	12/2004	Shioda	N/A	N/A
2005/0046583	12/2004	Richards	N/A	N/A

2005/0066371	12/2004	Lu	N/A	N/A
2005/0068169	12/2004	Copley	N/A	N/A
2005/0068171	12/2004	Kelliher	N/A	N/A
2005/0078195	12/2004	Vanwagner	N/A	N/A
2005/0078672	12/2004	Caliskan et al.	N/A	N/A
2005/0083404	12/2004	Peirce	N/A	N/A
2005/0088521	12/2004	Blanco	N/A	N/A
2005/0094966	12/2004	Lao	N/A	N/A
2005/0131993	12/2004	Fatula, Jr.	N/A	N/A
2005/0134710	12/2004	Nomura	N/A	N/A
2005/0134966	12/2004	Burgner	N/A	N/A
2005/0167172	12/2004	Fernandez	N/A	N/A
2005/0188087	12/2004	Iyoda	N/A	N/A
2005/0206532	12/2004	Lock	N/A	N/A
2005/0206741	12/2004	Raber	N/A	N/A
2005/0228234	12/2004	Yang	N/A	N/A
2005/0232469	12/2004	Schofield	N/A	N/A
2006/0009238	12/2005	Stanco	N/A	N/A
2006/0012683	12/2005	Lao	N/A	N/A
2006/0015898	12/2005	Kim	N/A	N/A
2006/0028811	12/2005	Ross	N/A	N/A
2006/0055521	12/2005	Blanco	N/A	N/A
2006/0133476	12/2005	Page	N/A	N/A
2006/0158938	12/2005	Vanman	N/A	N/A
2006/0158968	12/2005	Vanman	N/A	N/A
2006/0164220	12/2005	Harter	N/A	N/A
2006/0164534	12/2005	Robinson	N/A	N/A
2006/0170770	12/2005	Maccarthy	N/A	N/A
2006/0176149	12/2005	Douglas	N/A	N/A
2006/0183505	12/2005	Willrich	N/A	N/A
2006/0203090	12/2005	Wang	N/A	N/A
2006/0220826	12/2005	Rast	N/A	N/A
2006/0244601	12/2005	Nishimura	N/A	N/A
2006/0256822	12/2005	Kwong	N/A	N/A
2006/0270465	12/2005	Lee	N/A	N/A
2006/0274828	12/2005	Siemens	N/A	N/A
2006/0282021	12/2005	Devaul	N/A	N/A
2006/0287821	12/2005	Lin	N/A	N/A
2006/0293571	12/2005	Bao	N/A	N/A
2007/0021134	12/2006	Liou	N/A	N/A
2007/0039030	12/2006	Romanowich	N/A	N/A
2007/0064108	12/2006	Haler	N/A	N/A
2007/0067079	12/2006	Kosugi	N/A	N/A
2007/0102508	12/2006	McIntosh	N/A	N/A
2007/0117083	12/2006	Winneg	N/A	N/A
2007/0132567	12/2006	Schofield	N/A	N/A
2007/0152811	12/2006	Anderson	N/A	N/A
2007/0172053	12/2006	Poirier	N/A	N/A
2007/0177023	12/2006	Beuhler	N/A	N/A
2007/0200914	12/2006	Dumas	N/A	N/A



2007/0217761	12/2006	Chen	N/A	N/A
2007/0222859	12/2006	Chang	N/A	N/A
2007/0229350	12/2006	Scalisi	N/A	N/A
2007/0257781	12/2006	Denson	N/A	N/A
2007/0257782	12/2006	Etcheson	N/A	N/A
2007/0257804	12/2006	Gunderson	N/A	N/A
2007/0257815	12/2006	Gunderson	N/A	N/A
2007/0257987	12/2006	Wang	N/A	N/A
2007/0260361	12/2006	Etcheson	N/A	N/A
2007/0268158	12/2006	Gunderson	N/A	N/A
2007/0271105	12/2006	Gunderson	N/A	N/A
2007/0274705	12/2006	Kashiwa	N/A	N/A
2007/0285222	12/2006	Zadnikar	N/A	N/A
2007/0287425	12/2006	Bates	N/A	N/A
2007/0293186	12/2006	Lehmann	N/A	N/A
2007/0297320	12/2006	Brummette	N/A	N/A
2008/0001735	12/2007	Tran	N/A	N/A
2008/0002599	12/2007	Yau	N/A	N/A
2008/0004055	12/2007	Yannay	N/A	N/A
2008/0030580	12/2007	Kashiwa	N/A	N/A
2008/0042825	12/2007	Denny	N/A	N/A
2008/0043736	12/2007	Stanley	N/A	N/A
2008/0049831	12/2007	Richardson	N/A	N/A
2008/0063252	12/2007	Dobbs	N/A	N/A
2008/0100705	12/2007	Kister	N/A	N/A
2008/0122603	12/2007	Plante	N/A	N/A
2008/0126804	12/2007	Zhang et al.	N/A	N/A
2008/0127160	12/2007	Rackin	N/A	N/A
2008/0129518	12/2007	Carlton-Foss	N/A	N/A
2008/0211906	12/2007	Lovric	N/A	N/A
2008/0234934	12/2007	Otani	N/A	N/A
2008/0239064	12/2007	Iwasaki	N/A	N/A
2008/0246656	12/2007	Ghazarian	N/A	N/A
2008/0266118	12/2007	Pierson	N/A	N/A
2009/0002491	12/2008	Haler	N/A	N/A
2009/0002556	12/2008	Manapragada	N/A	N/A
2009/0021591	12/2008	Sako	N/A	N/A
2009/0027061	12/2008	Curt	N/A	N/A
2009/0027499	12/2008	Nicholl	N/A	N/A
2009/0070820	12/2008	Li	N/A	N/A
2009/0085740	12/2008	Klein	N/A	N/A
2009/0122142	12/2008	Shapley	N/A	N/A
2009/0141129	12/2008	Dischinger	N/A	N/A
2009/0169068	12/2008	Okamoto	N/A	N/A
2009/0207252	12/2008	Raghunath	N/A	N/A
2009/0213204	12/2008	Wong	N/A	N/A
2009/0243794	12/2008	Morrow	N/A	N/A
2009/0252486	12/2008	Ross	N/A	N/A
2009/0273672	12/2008	Koudritski	N/A	N/A
2009/0276531	12/2008	Myka	N/A	N/A

2009/0290022	12/2008	Uhm	N/A	N/A
2010/0060734	12/2009	Chou	N/A	N/A
2010/0077437	12/2009	McManus	N/A	N/A
2010/0113072	12/2009	Gibson	N/A	N/A
2010/0177891	12/2009	Keidar	N/A	N/A
2010/0188201	12/2009	Cook	N/A	N/A
2010/0191411	12/2009	Cook	N/A	N/A
2010/0238262	12/2009	Kurtz	N/A	N/A
2010/0242076	12/2009	Potesta	N/A	N/A
2010/0250021	12/2009	Cook	N/A	N/A
2010/0265331	12/2009	Tanaka	N/A	N/A
2010/0279649	12/2009	Thomas	N/A	N/A
2010/0328463	12/2009	Haler	N/A	N/A
2011/0006151	12/2010	Beard	N/A	N/A
2011/0030016	12/2010	Pino	N/A	N/A
2011/0069151	12/2010	Orimoto	N/A	N/A
2011/0084820	12/2010	Walter	N/A	N/A
2011/0094003	12/2010	Spiewak	N/A	N/A
2011/0128350	12/2010	Oliver	N/A	N/A
2011/0145191	12/2010	Anderson	N/A	N/A
2011/0261176	12/2010	Monaghan	N/A	N/A
2011/0267433	12/2010	Thorpe	N/A	N/A
2012/0038689	12/2011	Ishii	N/A	N/A
2012/0056722	12/2011	Kawaguchi	N/A	N/A
2012/0063736	12/2011	Simmons	N/A	N/A
2012/0127315	12/2011	Heier	N/A	N/A
2012/0162436	12/2011	Cordell	N/A	N/A
2012/0189286	12/2011	Takayama	N/A	N/A
2012/0259852	12/2011	Aasen	N/A	N/A
2012/0268259	12/2011	Igel	N/A	N/A
2012/0276954	12/2011	Kowalsky	N/A	N/A
2013/0021153	12/2012	Keays	N/A	N/A
2013/0027552	12/2012	Guzik	N/A	N/A
2013/0039157	12/2012	Waites	N/A	N/A
2013/0076531	12/2012	San Vicente	N/A	N/A
2013/0080836	12/2012	Stergiou	N/A	N/A
2013/0080841	12/2012	Reddy	N/A	N/A
2013/0096731	12/2012	Tamari	N/A	N/A
2013/0096733	12/2012	Manotas	N/A	N/A
2013/0147962	12/2012	Siann	N/A	N/A
2013/0156397	12/2012	Chen	N/A	N/A
2013/0198637	12/2012	Childers	N/A	N/A
2013/0209057	12/2012	Ofir	N/A	N/A
2013/0219053	12/2012	Quade et al.	N/A	N/A
2013/0222640	12/2012	Baek	N/A	N/A
2013/0242262	12/2012	Lewis	N/A	N/A
2013/0263122	12/2012	Levijarvi	N/A	N/A
2013/0282919	12/2012	Richards	N/A	N/A
2013/0314537	12/2012	Haler	N/A	N/A
2013/0318391	12/2012	Kazemi	N/A	N/A

2013/0336627	12/2012	Calvert	N/A	N/A
2013/0342697	12/2012	Haler	N/A	N/A
2014/0007107	12/2013	Nachum	N/A	N/A
2014/0009585	12/2013	Campbell	N/A	N/A
2014/0028818	12/2013	Brockway	N/A	N/A
2014/0037262	12/2013	Sako	N/A	N/A
2014/0043485	12/2013	Bateman	N/A	N/A
2014/0049636	12/2013	O'Donnell	N/A	N/A
2014/0063249	12/2013	Miller	N/A	N/A
2014/0073252	12/2013	Lee et al.	N/A	N/A
2014/0092251	12/2013	Troxel	N/A	N/A
2014/0092299	12/2013	Phillips	N/A	N/A
2014/0094992	12/2013	Lambert	N/A	N/A
2014/0101453	12/2013	Senthurpandi	N/A	N/A
2014/0104488	12/2013	Samuels	N/A	N/A
2014/0105589	12/2013	Samuels	N/A	N/A
2014/0114692	12/2013	Pearce	N/A	N/A
2014/0122721	12/2013	Marocchi	N/A	N/A
2014/0125966	12/2013	Phillips	N/A	N/A
2014/0136445	12/2013	Thorgerson	N/A	N/A
2014/0156833	12/2013	Robinson	N/A	N/A
2014/0160250	12/2013	Pomerantz	N/A	N/A
2014/0167954	12/2013	Johnson	N/A	N/A
2014/0169752	12/2013	Johnson	N/A	N/A
2014/0187190	12/2013	Schuler	N/A	N/A
2014/0195105	12/2013	Lambert	N/A	N/A
2014/0199041	12/2013	Blanco	N/A	N/A
2014/0210625	12/2013	Nemat-Nasser	N/A	N/A
2014/0211962	12/2013	Davis	N/A	N/A
2014/0215885	12/2013	Sullivan et al.	N/A	N/A
2014/0227671	12/2013	Olmstead	N/A	N/A
2014/0253740	12/2013	Barnwal et al.	N/A	N/A
2014/0257539	12/2013	Vock	N/A	N/A
2014/0267615	12/2013	Tapia	N/A	N/A
2014/0267775	12/2013	Lablans	N/A	N/A
2014/0267894	12/2013	Campbell	N/A	N/A
2014/0270685	12/2013	Letke	N/A	N/A
2014/0294257	12/2013	Tussy	N/A	N/A
2014/0300739	12/2013	Mirmar	N/A	N/A
2014/0305024	12/2013	Russell	N/A	N/A
2014/0307981	12/2013	Rauscher	N/A	N/A
2014/0311215	12/2013	Keays	N/A	N/A
2014/0313341	12/2013	Stribling	N/A	N/A
2014/0317052	12/2013	Goldstein	N/A	N/A
2014/0321541	12/2013	Klein	N/A	N/A
2014/0327928	12/2013	Monroe	N/A	N/A
2014/0347265	12/2013	Aimone	N/A	N/A
2014/0351217	12/2013	Bostock	N/A	N/A
2014/0361185	12/2013	Howell	N/A	N/A
2014/0368601	12/2013	Decharms	N/A	N/A

2014/0375807	12/2013	Muetzel	N/A	N/A
2014/0376872	12/2013	Lipetz	N/A	N/A
2015/0002898	12/2014	Monroe	N/A	N/A
2015/0015715	12/2014	Gloger	N/A	N/A
2015/0021451	12/2014	Clearman	N/A	N/A
2015/0030320	12/2014	Clearman	N/A	N/A
2015/0051502	12/2014	Ross	N/A	N/A
2015/0063776	12/2014	Ross	N/A	N/A
2015/0078727	12/2014	Ross	N/A	N/A
2015/0086175	12/2014	Lorenzetti	N/A	N/A
2015/0088335	12/2014	Lambert	N/A	N/A
2015/0100737	12/2014	Kessler	N/A	N/A
2015/0103246	12/2014	Phillips	N/A	N/A
2015/0222817	12/2014	Broadway	N/A	N/A
2015/0237252	12/2014	O'Donnell	N/A	N/A
2016/0042767	12/2015	Araya et al.	N/A	N/A
2016/0173832	12/2015	Stewart	N/A	N/A
2017/0241727	12/2016	Stewart	N/A	N/A
2017/0241728	12/2016	Stewart	N/A	N/A
2018/0274876	12/2017	Stewart	N/A	N/A
2021/0068034	12/2020	Juhasz et al.	N/A	N/A

#### FOREIGN PATENT DOCUMENTS

Patent No.	Application Date	Country	CPC
102010019451	12/2010	DE	N/A
522445	12/1995	EP	N/A
1770884	12/2006	EP	N/A
1868381	12/2006	EP	N/A
2109074	12/2008	EP	N/A
2273624	12/1993	GB	N/A
2320389	12/1997	GB	N/A
2351055	12/1999	GB	N/A
2343252	12/2002	GB	N/A
2417151	12/2005	GB	N/A
2425427	12/2005	GB	N/A
2455885	12/2009	GB	N/A
2485804	12/2011	GB	N/A
H08-153298	12/1995	JP	N/A
2000137263	12/2004	JP	N/A
2383915	12/2009	RU	N/A
1990005076	12/1989	WO	N/A
1998031146	12/1996	WO	N/A
1997038526	12/1996	WO	N/A
2000039556	12/1999	WO	N/A
2000051360	12/1999	WO	N/A
2002049881	12/2001	WO	N/A
2002095757	12/2001	WO	N/A
2003049446	12/2002	WO	N/A
2004036926	12/2003	WO	N/A
2013/175741	12/2012	WO	N/A

2014000161	12/2013	WO	N/A
2014052898	12/2013	WO	N/A
2015122129	12/2014	WO	N/A
2016014724	12/2015	WO	N/A

## OTHER PUBLICATIONS

European Patent Office, Communication under Rule 71(3) EPC for European Application No. 15797493.2-1207 mailed Apr. 4, 2024. cited by applicant

International Searching Authority, International Search Report for International Patent Application No. PCT/US2015/056490 mailed Jan. 18, 2016. cited by applicant

Zepcam Wearable Video Technology; <http://zepcam.com/product.aspx>; Date printed: Feb. 21, 2016, Date posted: Unknown; p. 1. cited by applicant

Zepcam T1 Product Overview, Date Printed: Feb. 21, 2016; Date Published: Unknown; pp. 1-4. cited by applicant

The Wolfcom 3rd Eye Police Body Camera;  
[http://wolfcomusa.com/wolfcom\\_3rd\\_eye\\_police\\_body\\_camera.html](http://wolfcomusa.com/wolfcom_3rd_eye_police_body_camera.html); Date Printed: Feb. 19, 2016; Date Posted: Unknown; pp. 1-25. cited by applicant

The New Wolfcom Vision Pro Police Body Worn Camera;  
[http://www.wolfcomusa.com/wolfcom\\_vision\\_police\\_body\\_worn.html](http://www.wolfcomusa.com/wolfcom_vision_police_body_worn.html); Date Printed: Feb. 19, 2016; Date Posted: unknown; pp. 1-25. cited by applicant

Watchguard Vista Body-Worn Camera Brochure; <http://watchguardvideo.com/vista/overview>; Date Printed: Feb. 19, 2016; Date Posted: unknown; pp. 1-20. cited by applicant

The Safariland Group, Viewu Cameras, <http://www.viewu.com/viewu-products/hardware/>; Date Printed: Feb. 19, 2016; Date Posted: Unknown; pp. 1-5. cited by applicant

Digital Ally Body Worn Cameras; <http://digitalallyinc.com/bodyworncameras.cfm>; Date Printed: Feb. 19, 2016; Date Posted: Unknown; pp. 1-8. cited by applicant

Digital Ally Software; <http://www.digitalallyinc.com/software/cfm>; Date Printed: Feb. 19, 2016; Date Posted: Unknown; pp. 1-16. cited by applicant

Larson, Soleymani, Serdyukov, Automatic Tagging and Geo-tagging in Video Collections and Communities; Apr. 17-20, 2011, ICMR, Trento, Italy. cited by applicant

Iphone Video Metadata, CSI Tech; <http://www.csitech.co.uk/iphone-video-metadata/>; Date Printed: Mar. 3, 2015; Date Posted: Unknown; pp. 1-3. cited by applicant

Ocean Systems Quick DME—Digital Media Evidence Manager Brochure;  
[http://www.oceansystems.com/forensic/digital\\_evidence\\_property\\_room/index.php](http://www.oceansystems.com/forensic/digital_evidence_property_room/index.php); Date Printed: Feb. 21, 2016; Date Posted: Unknown; pp. 1-2. cited by applicant

Activists' Guide To Archiving Videos, Acquire: Acquiring Raw Video and Metadata;  
<http://archiveguide.witness.org/acquire/acquiring-raw-video-and-metadata>; Date Printed: Mar. 3, 2015; Date Posted: Unknown; pp. 1-3. cited by applicant

Google Developeres Guide, YouTube Data API, Implementing OAuth 2.0 Authorization;  
<http://developers.google.com/youtube/v3/guides/authentication>; Date Printed: Mar. 3, 2015; Date Posted: Unknown; pp. 1-6. cited by applicant

Canadian Patent Office, Canadian Office Action for Canadian Patent Application No. 2964772 mailed Jan. 29, 2019. cited by applicant

Burris, Jack A. "Officer Data Recording and Location System," Feb. 27, 2001, Motorola Inc. Found at <https://ip.com/IPCOM/000004598>. (Year: 2001). cited by applicant

European Patent Office, Communication Pursuant to Article 94(3) EPC for European Application No. 15797493.2 mailed Nov. 26, 2021. cited by applicant

Taiwan Intellectual Property Office, Search Report for Taiwan Invention Patent Application No. 10413435 completed Mar. 6, 2017. cited by applicant

*Primary Examiner:* Vo; Tim T

*Assistant Examiner:* Yu; Henry W

---

## **Background/Summary**

CROSS-REFERENCES TO RELATED APPLICATIONS (1) This application is a continuation of U.S. application Ser. No. 18/149,632, filed Jan. 3, 2023, which is a continuation of U.S. application Ser. No. 17/157,720, filed Jan. 25, 2021, which is a continuation of U.S. application Ser. No. 16/508,105, filed Jul. 10, 2019, which is a continuation of U.S. application Ser. No. 14/918,392, filed Oct. 20, 2015, which claims the benefit of Provisional Application No. 62/066,083, filed Oct. 20, 2014, and Provisional Application No. 62/192,466, filed Jul. 14, 2015, the entire disclosures of which are hereby incorporated by reference herein.

## **BACKGROUND**

(1) Existing techniques for controlling devices in a system, such as wearable cameras operating in a law enforcement context, have various shortcomings. For example, some existing systems require a recording state of a camera to be manually changed by its user. This can lead to video not being recorded for important incidents because a user is too distracted by urgent events that require attention to operate the camera, or for other reasons. What is needed are effective systems and methods for distributed control of wearable cameras and other controllable devices that do not require manual control by a user, but instead allow settings on the controllable devices to be changed in response to events that can automatically be detected.

## **SUMMARY**

(2) This summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This summary is not intended to identify key features of the claimed subject matter, nor is it intended to be used as an aid in determining the scope of the claimed subject matter.

(3) In some embodiments, a system comprising a first peripheral device and a controllable device is provided. The first peripheral device is configured to broadcast a first notification indicating an availability of first information generated by the first peripheral device, and to transmit the first information in response to a request for the first information. The controllable device is configured to receive the first notification from the first peripheral device; in response to the first notification, transmit a request for the first information to the first peripheral device; and in response to the first information received from the first peripheral device, change at least one setting of the controllable device based on the first information.

(4) In some embodiments, a controllable device is provided. The controllable device comprises a short-range wireless interface and a notification processing engine. The notification processing engine is configured to receive a first notification from a first peripheral device via the short-range wireless interface; and in response to a determination that the controllable device should process the first notification, change at least one setting of the controllable device based on the first notification.

(5) In some embodiments, a method of processing received signals for control of a controllable device is provided. The method comprises receiving, by the controllable device, a first notification from a first peripheral device; and in response to determining that the controllable device should

process the first notification, changing at least one setting of the controllable device based on the first notification.

---

## Description

### DESCRIPTION OF THE DRAWINGS

- (1) The foregoing aspects and many of the attendant advantages of this invention will become more readily appreciated as the same become better understood by reference to the following detailed description, when taken in conjunction with the accompanying drawings, wherein:
- (2) FIG. 1 is a high-level schematic diagram that illustrates communication between various components of an exemplary embodiment of a system according to various aspects of the present disclosure;
- (3) FIG. 2 is a block diagram that illustrates an exemplary embodiment of a controllable device according to various aspects of the present disclosure;
- (4) FIG. 3 is a block diagram that illustrates components of an exemplary embodiment of a controllable camera device according to various aspects of the present disclosure;
- (5) FIG. 4 is a block diagram that illustrates an exemplary embodiment of a peripheral device according to various aspects of the present disclosure;
- (6) FIG. 5 is a block diagram that illustrates a light bar peripheral device according to various aspects of the present disclosure;
- (7) FIG. 6 is a block diagram that illustrates an exemplary embodiment of a command peripheral device according to various aspects of the present disclosure;
- (8) FIGS. 7A-7C are high-level schematic diagrams of exemplary embodiments of communication between devices according to various aspects of the present disclosure;
- (9) FIGS. 8A-8C are a flowchart that illustrates an exemplary embodiment of a method of transmitting and processing event notifications according to various aspects of the present disclosure;
- (10) FIG. 9 is a flowchart that illustrates a procedure for transmitting a notification from a device according to various aspects of the present disclosure; and
- (11) FIG. 10 is a block diagram that illustrates aspects of an exemplary computing device appropriate for use as a computing device of the present disclosure.

### DETAILED DESCRIPTION

(12) In a system involving central control functions, the central (or federated) part of the system issues commands to other parts of the system and those parts take action in accordance with the received commands. The part that makes decisions and issues commands may be referred to as the master. The part or parts that perform commands may be referred to as slaves. By contrast, in a system involving distributed control functions such as the systems described herein, each member or device within the system that has responsibility for controlling part of the system's behavior includes logic to determine what action, if any, will follow as a response to determining information (e.g., passage of time, results of computation) or receiving information (e.g., one or more notice(s) of change(s) in status(es)). In systems that involve distributed control functions, a change of status of one member of a system may provide a basis for action by another member of the system. Status may be the result of sensing a condition of the environment, sensing the condition of a component, receiving the output of a conventional sensor, and/or sensing the condition of a link between components. When a member of a system receives an indication that status has changed, action taken in response may be determined by logic implemented in that member of the system.

(13) A condition of a component may include a physical condition including but not limited to temperature, physical location or movement, configuration, capacity to perform, response time,

forecast of capability, operating mode, faults encountered, inputs received, received messages, and results of computation. A condition of a link between components may include but is not limited to an operating electrical parameter, a description of establishing connection, a disconnection, a mode of communication, a network capacity, a latency, a description of a queue or buffer, a description of message routing, an extent of noise, a time allotment, and a description of a node (e.g., control, dormant, active, in range).

(14) In some embodiments, recorded data is collected during law enforcement activities (e.g., traffic stops, incidents where police are dispatched to investigate or enforce the law, unmanned traffic monitoring). This class of embodiments will be used below to describe systems, methods, and communication that may be implemented in an analogous manner in a system used for other purposes, for example, any quantity of users who desire to record data during their chosen activities (e.g., first responders, surgical teams, sports teams, military operatives, security officers, social event managers, news reporting, film production, music production, classroom instruction, consumer surveys, group interviews). An officer is a user as discussed below.

(15) FIG. 1 is a high-level schematic diagram that illustrates communication between various components of an exemplary embodiment of a system according to various aspects of the present disclosure. In some embodiments, the system **100** is configured to allow for distributed control of various devices within the system **100**.

(16) In general, a user **92**, such as a law enforcement officer, may be associated with one or more devices. The devices may include, but are not limited to, a camera **106**, a weapon **108**, and various devices associated with a vehicle **94** such as a light bar device **110**. The camera **106** may be, for example, a wearable camera that records video and/or audio data when activated. The weapon **108** may be, for example, a conducted energy weapon (CEW) that transmits notifications regarding events such as firing events, cartridge loading, holster removal, and/or the like. The light bar device **110** may detect changes in state such as activation of the light bar on the vehicle **94**, which is usually associated with an emergency situation. Other devices, such as a dashboard camera, a heart rate sensor device, a holster sensor device, and/or the like may also be included in the system **100** but are not illustrated in FIG. 1.

(17) In some embodiments, at least some of the devices may have limited communication functionality. For example, devices may have short-range wireless communication abilities, but some devices may only be able to perform a direct long-range transmission or reception of information, such as to an evidence management system **102**, when physically connected to an evidence collection dock **104** that communicates with the evidence management system **102** via a broadband network **90** such as a LAN, a WAN, and/or the Internet. Accordingly, technical problems arise when attempting to control the devices in an automated manner, at least in that no reliable communication path from a central control device to the controllable devices is available. In some embodiments, a personal assistant computing device **107** is provided. The personal assistant computing device **107** is illustrated as a smartphone computing device, but in some embodiments may be a laptop computing device, a tablet computing device, or any other suitable computing device capable of being carried by the user **92** or a vehicle **94** associated with the user **92** and capable of performing the actions described herein. The personal assistant computing device **107** may be capable of short-range communication with the other devices in the system **100**, and may also be capable of long range communication with the evidence management system **102**, a dispatch system, or any other system. In some embodiments, the personal assistant computing device **107** has the components and capabilities of a peripheral device **706** and/or a controllable device **702** as discussed below. Further aspects of these devices and their capabilities will be discussed below.

(18) FIG. 2 is a block diagram that illustrates an exemplary embodiment of a controllable device according to various aspects of the present disclosure. As illustrated, the controllable device **702** includes a short-range wireless interface **202**. The short-range wireless interface **202** may be



configured to use any suitable wireless networking technology capable of wirelessly exchanging data with other devices within range of the controllable device **702**, including but not limited to Bluetooth (including Bluetooth Low Energy), ZigBee, NFC, and/or the like.

(19) As illustrated, the controllable device **702** also includes a notification generation engine **204**, an information transmission engine **206**, a notification repeater engine **208**, and a notification processing engine **210**. In general, the term “engine” as used herein refers to logic embodied in hardware or software instructions, which can be written in a programming language, such as C, C++, COBOL, JAVA™, PHP, Perl, HTML, CSS, JavaScript, VBScript, ASPX, Microsoft .NET™ languages such as C#, and/or the like. An engine may be compiled into executable programs or written in interpreted programming languages. Engines may be callable from other engines or from themselves. Generally, the engines described herein refer to modules that can be merged with other engines to form a single engine, or can be divided into multiple sub-engines. The engines may be embodied in any type of circuit such as an FPGA or an ASIC; and/or may be stored in any type of computer-readable medium or computer storage device and be stored on and executed by one or more general purpose computers, thus creating a special purpose computer configured to provide the engine. Accordingly, the devices and systems illustrated herein include one or more computing devices configured to provide the illustrated engines, though the computing devices themselves have not been illustrated in every case for the sake of clarity.

(20) In some embodiments, the notification generation engine **204** is configured to create and transmit new notifications based on information obtained by components of the controllable device **702**. In some embodiments, the information transmission engine **206** is configured to respond to requests for information associated with notifications after notifications have been transmitted by the notification generation engine **204** and received by other devices. In some embodiments, the notification repeater engine **208** is configured to create and transmit notifications based on notifications received by the controllable device **702** from other devices. In some embodiments, the notification processing engine **210** is configured to analyze notifications received from other devices via the short-range wireless interface **202**, and to determine whether a setting of the controllable device **702** should be changed in response to the notifications. In some embodiments, the notification processing engine **210** is also configured to filter notifications for selective retransmission. Further description of the configuration of and actions performed by these components is provided below.

(21) One of ordinary skill in the art will recognize that, though components common to all controllable devices are illustrated in FIG. 2, in some embodiments, particular controllable devices may include additional components. For example, FIG. 3 is a block diagram that illustrates components of an exemplary embodiment of a controllable camera device according to various aspects of the present disclosure. In some embodiments, the controllable camera device **752** is a wearable camera that provides a point of view associated with the user **92**. In some embodiments, the controllable camera device **752** may be attached to another device carried by the user **92**, such as a weapon.

(22) Because the controllable camera device **752** is a type of controllable device **702**, it includes a short-range wireless interface **202**, a notification generation engine **204**, an information transmission engine **206**, a notification repeater engine **208**, and a notification processing engine **210** as described above. Further, as with any camera, the controllable camera device **752** includes at least a video sensor **302**, and may also include an audio sensor **306**. Data collected by the video sensor **302** and the audio sensor **306** may be stored in a video data store **322** and an audio data store **324**, respectively, though in some embodiments the audio and video information is stored together in a single data store and/or in a combined data file. One example of an appropriate video sensor is a charge-coupled device (CCD), though any other digital image sensor, such as a complementary metal-oxide-semiconductor (CMOS) sensor, an active pixel sensor, or any other type of digital image sensor could be used instead. Any type of microphone may be used as an audio sensor **306**.

(23) As understood by one of ordinary skill in the art, a “data store” as described herein may be any suitable device configured to store data for access by a computing device. One example of a data store suitable for use with the high capacity needs of the evidence management system **102** is a highly reliable, high-speed relational database management system (RDBMS) executing on one or more computing devices and accessible over a high-speed network. However, any other suitable storage technique and/or device capable of quickly and reliably providing the stored data in response to queries may be used, such as a key-value store, an object database, and/or the like. Further, for the evidence management system **102**, the computing device providing the data store may be accessible locally instead of over a network, or may be provided as a cloud-based service. A data store may also include data stored in an organized manner on a computer-readable storage medium, as described further below. One example of a data store suitable for use with the needs of the controllable camera device **752**, which includes reliable storage but also low overhead, is a file system or database management system that stores data in files (or records) on a computer-readable medium such as flash memory, random access memory (RAM), hard disk drives, and/or the like. One of ordinary skill in the art will recognize that separate data stores described herein may be combined into a single data store, and/or a single data store described herein may be separated into multiple data stores, without departing from the scope of the present disclosure.

(24) The controllable camera device **752** also includes a camera control engine **304**. The camera control engine **304** is configured to change settings of the controllable camera device **752** and thereby cause the controllable camera device **752** to perform camera functions. For example, the camera control engine **304** may cause the video sensor **302** and audio sensor **306** to begin obtaining data, and may cause the video and/or audio data to be saved in a video data store **322** and/or audio data store **324** after receiving it from the sensor. The camera control engine **304** may receive commands to start, pause, or stop the video recording from a physical user interface device of the controllable camera device **752**, or may automatically start, pause, or stop the video recording in response to an instruction received from, for example, the notification processing engine **200** related to a notification received via the short-range wireless interface **202**. The camera control engine **304** may also change settings on the video sensor **302** and/or audio sensor **306** in response to such instructions, such as an image quality, a white balance setting, a gain, and/or any other video or audio recording setting. Starting video recording may include transitioning from a pre-trigger mode, wherein video data and/or audio data is saved in a pre-trigger buffer such as a ring buffer, to a post-trigger mode wherein video data and/or audio data is saved in the video data store **322** and/or the audio data store **324**. Likewise, stopping video recording may include transitioning from the post-trigger mode to the pre-trigger mode.

(25) In some embodiments, the camera control engine **304** may record events relating to starting, pausing, or stopping the video recording, as well as the settings for the video sensor **302** and audio sensor **306**, in an audit trail data store **316**. In some embodiments, the camera control engine **304** may embed the sensor configuration information in the data stored in the video data store **322** and/or audio data store **324**, along with other information about the state of the controllable camera device **752**. The notification processing engine **210** may likewise store records of received notifications and/or information, and the notification generation engine **204** may likewise store records of generated notifications and/or information, in the audit trail data store **316**, the video data store **322**, and/or the audio data store **324**.

(26) The controllable camera device **752** may also include a number of general components, including a motion sensor **338**, a physical dock interface **332**, and a battery sensor **334**. The motion sensor **338**, such as a multi-axis accelerometer, produces information that may be used by other components. For example, the notification generation engine **204** may use the motion sensor **338** to detect a certain types of motion, such as running, falling, and/or the like, and to generate notifications announcing when particular types of motion are detected.

(27) The physical dock interface **332** is configured to mate with a physical connector on the

evidence collection dock **104**. In some embodiments, the physical dock interface **332** may include a female 2.5 mm socket, which mates with a male 2.5 mm plug of the evidence collection dock **104**. Once docked, the controllable camera device **752** may then transfer data to the evidence management system **102** via the connection using any suitable data transmission protocol. In some embodiments, power may be transferred to the controllable camera device **752** via the physical dock interface **332** instead of or in addition to the data transfer. In some embodiments, other connection hardware that can provide both power and data connectivity may be used, such as a USB connector, a USB Type-C connector, a Firewire connector, and/or the like.

(28) The battery sensor **334** is another example of an internal system that may generate events that are monitored by the notification generation engine **204** for the generation of notifications. For example, the battery sensor **334** may detect a low battery state, a battery overheating state, and/or the like, and may provide alerts to the notification generation engine **204** for the generation of notifications. Other well-known internal device systems, such as a file system controller, a free-fall sensor, and/or the like, may similarly provide alerts to the notification generation engine **204**, but are not illustrated here.

(29) FIG. 4 is a block diagram that illustrates an exemplary embodiment of a peripheral device according to various aspects of the present disclosure. As illustrated, the peripheral device **706** includes a short-range wireless interface **402**, a notification generation engine **404**, a notification repeater engine **406**, and an information transmission engine **408**. One of ordinary skill in the art will recognize that these components are similar to the short-range wireless interface **202**, notification generation engine **204**, notification repeater engine **208**, and information transmission engine **206** illustrated and described above with respect to the controllable device **702**. As such, a detailed description of the similar components in the peripheral device **706** is not provided here for the sake of brevity.

(30) The peripheral device **706** and the controllable device **702** have some overlapping capabilities (as discussed in more detail below), and so include similar components. However, the peripheral device **706** is generally used as a source of notifications based on events detected by or generated by components of the peripheral device **706**, and is not generally controllable based on received notifications. Accordingly, the peripheral device **706** is missing the notification processing engine **210** that is present in the controllable device **702**. This allows for the simplification of the hardware used in a peripheral device **706**, thus reducing cost and improving battery life.

(31) One of ordinary skill in the art will recognize that, though components common to all peripheral devices are illustrated in FIG. 4, in some embodiments, particular peripheral devices may include additional components. As one example, FIG. 5 is a block diagram that illustrates a light bar peripheral device **756** according to various aspects of the present disclosure. The light bar peripheral device **756** is suitable for associating with a light bar **110** of a vehicle **94**, and will help make information about the status of the light bar **110** available within the system **100**. The light bar peripheral device **756** is a type of peripheral device **706**, and so it includes a short-range wireless interface **402**, a notification generation engine **404**, a notification repeater engine **406**, and an information transmission engine **408** as described above.

(32) The light bar peripheral device **756** also includes a light bar status sensor **502**. The light bar status sensor **502** is configured to determine at least a state of the lights on the light bar **110** and/or the status of any other hardware associated with the light bar **110**, including but not limited to a siren, a camera, and/or the like. The light bar status sensor **502** detects when a state of the light bar **110** changes (e.g., the lights are turned on or off), and is configured to transmit alerts regarding the state changes to the notification generation engine **404**. In some embodiments, the notification generation engine **404** receives the alerts from the light bar status sensor **502** and generates notifications when appropriate. The content of the notification generated by the notification generation engine **404** may merely indicate that the status of the light bar **110** has changed, as opposed to also including an indication of the actual status. In response to receiving such a

notification, another device may request information that includes the actual status of the light bar **110** from the light bar peripheral device **756**. To respond to the request, the information transmission engine **408** may use the light bar status sensor **502** to determine the state of the light bar **110** (e.g., lights on, lights off, a particular pattern being displayed by the lights, and/or the like) for transmission as information associated with the notification.

(33) As will be recognized by one of ordinary skill in the art, although a light bar peripheral device **756** is illustrated and described in FIG. 5, many other types of peripheral devices **706** and controllable devices **702** not illustrated in the drawings may be used within the system **100**. These devices will include the common features of the peripheral device **706** and/or the controllable device **702**, as well as additional sensors appropriate for detecting relevant statuses of the components of the particular device.

(34) For example, in some embodiments, a weapon peripheral device may be provided. A weapon provides force for self-defense, defense of others, and/or defense of property. For example, a weapon may include conventional circuits and/or mechanisms for cutting (e.g., hand knife, jaws of life), propelling a projectile (e.g., hand gun, shotgun), releasing noxious material (e.g., pepper spray), and/or causing involuntary muscle contractions (e.g., conducted electrical weapons (CEWs) such as those marketed by TASER International Inc.). A weapon peripheral device may include sensors for determining a change in status of a safety device, detecting a discharge of the weapon, detecting a change in loading status of the weapon, and/or the like. As a similar example, a weapon holster peripheral device may be provided. The weapon holster may be configured to carry a weapon when not in use, and the weapon holster peripheral device may include a sensor configured to detect when the weapon is placed into or removed from the holster.

(35) As another example, in some embodiments, a personal assistant device may be configured as a peripheral device. A personal assistant device, such as the personal assistant device **107** illustrated in FIG. 1, may include any personal computer system that performs user-selected programs and supports communication with other officers (e.g., officers not co-located with the officer, officers operating dispatch or inventory functions, and/or the like) and/or communicates with other members of the system (e.g., forwards notices, batches notices to forward, derives a new notice from one or more other notices). For example, a personal assistant may be packaged as or with the functions of a laptop computing device, a wrist-worn computing device, a tablet computing device, a body-worn computing device, a smartphone, and/or the like. Communication may include any conventional technologies (e.g., cellular phone service, text and data messaging, email, voice over IP, push-to-talk, video over cellular, video over IP, and/or the like). Communication may use conventional public or private media (e.g., public cellular phone service, local area service, reserved channels, private trunk service, emergency services radio bands, and/or the like). In some embodiments, the personal assistant device may be configured as a controllable device, as opposed to a peripheral device.

(36) As yet another example, a personal monitor peripheral device may be provided. A personal monitor peripheral device may include any apparatus for monitoring and/or recording physical and biological aspects of the user **92** (e.g., location, orientation, position, acceleration, ambient temperature, body temperature, voice, heart rate, indications of stress, and/or the like). Sensors that generate inputs to a personal monitor peripheral device may be of any conventional technology (e.g., analog voltage or current, frequency, pulse position, optical transducers, hall effect, magnetic induction, acceleration, temperature, audio, and/or the like). In some embodiments, a personal monitor peripheral device permits assessment of a user's present level of physiological stress, psychological stress, and/or capacity to perform his or her duties within the policies and procedures prescribed by his or her superiors. A personal monitor peripheral device may be packaged to be worn on the wrist, chest, waist, and/or head. A personal monitor peripheral device with separable components may communicate among its components using conventional short range communication technology (e.g., Bluetooth, Zigbee, and/or the like).

(37) As still another example, a vehicle monitor peripheral device may be provided. A vehicle monitor peripheral device includes any apparatus for monitoring and/or recording physical aspects of a vehicle (e.g., location, orientation, position, acceleration, ambient temperature, speed, direction, engine performance, supplies of consumables, operating temperature, emissions, operation of integral and accessory equipment, and/or the like). Sensors that generate inputs to a vehicle monitor peripheral device may be of any conventional technology (e.g., analog voltage or current, frequency, pulse position, optical transducers, hall effect, magnetic induction, acceleration, temperature, audio, and/or the like). Any conventional integrated or after-market installation for sensing, monitoring and recording technologies may be used. Some operating mode sensors may include a light bar operating mode sensor be packaged with a light bar; a siren operating mode sensor packaged with a siren; a combined siren and light bar operating mode sensor (if the siren and light bar themselves are combined; vehicle lighting operating mode sensor(s) (e.g., head lights, tail lights, directional and emergency flashers, passenger compartment lighting) packaged with suitable lighting assemblies and/or subassemblies; engine operating mode sensors integrated with engine controls such as ECMs; and/or the like.

(38) In some embodiments, vehicle environment monitors may be provided as peripheral devices or controllable devices. A vehicle environment monitor may include enhanced monitoring and/or recording sensors that expands an unaided user's awareness (e.g., night vision cameras, ultrasound detecting microphones, gunshot detection/location sensor, and/or the like). Other types of sensors that may be provided by a vehicle environment monitor include, but are not limited to: scanners for hidden weapons; sensors for illegal substances such as drugs; breathalyzer devices; still cameras for capturing portraits, scenes, documents, licenses, contraband, or counterfeit goods; video cameras adapted for investigations of particular areas (e.g., under-car or confined space cameras); explosives sensors; and/or the like. Some vehicle environment monitors may also provide analyzed data that goes beyond mere recording. Analysis may include recognition, correlation, and/or prediction based on information monitored or recorded from any source, such as other sensors within the system **100**. Analysis of video or still photographs may be used for recognition of car make and model and identification of the owner of the vehicle and owner of the vehicle license. Analysis of audio and video may be used for recognition and identification of voices, faces, body dimensions, birth marks, tattoos, clothing, currency, drivers' licenses, and/or documents. Predictions may include conventional algorithms for the prediction of crime, for example, predictions based on locations of persons, locations of vehicles, recent dispatches, and recent sniffed, snooped, or analyzed network packets.

(39) In some embodiments, some peripheral devices may be configured to generate notifications as desired by a user, as opposed to automatically in response to data generated by a sensor. As an example, FIG. 6 is a block diagram that illustrates an exemplary embodiment of a command peripheral device **602** according to various aspects of the present disclosure. Again, the command peripheral device **602** is a type of peripheral device **706**, and so it includes a short-range wireless interface **402**, a notification generation engine **404**, a notification repeater engine **406**, and an information transmission engine **408** as described above. In contrast to the above, the command peripheral device **602** includes a user interface engine **604**. The user interface engine **604** is configured to generate a user interface for accepting commands from a user intended for a controllable device. In this way, notifications may be generated within the system **100** that are not in response to a sensed status change, but are instead intentionally created by a user. When a command is received by the user interface engine **604**, the notification generation engine **404** generates a notification and optionally generates information for propagation through the system **100** in a manner similar to other notifications and information.

(40) In some embodiments, the command peripheral device **602** may be an interactive device carried by the user **92** or the vehicle **94**, such as a smart phone, a tablet computing device, a laptop computing device, and/or the like. In some embodiments, the command peripheral device **602** may

be a desktop computing device or a server computing device located remotely from the user **92** and operated by a dispatcher or other such user. In such embodiments, the command peripheral device **602** may include a long-range network interface, such as a wired network interface, a WiFi network interface, an LTE network interface, and/or the like. The notification in such embodiments would be sent in a targeted manner to another device with a long-range network interface, such as the personal assistant device **107**, which may then propagate the notification and/or information throughout the rest of the system **100** as any other notification and/or information is propagated.

(41) FIGS. 7A-7C are high-level schematic diagrams of exemplary embodiments of communication between devices according to various aspects of the present disclosure. In FIG. 7A, a setting is changed on a first controllable device **702** in response to a notification generated on a first peripheral device **704**. The first peripheral device **704** detects an event that causes a notification to be generated. At a first point in a communication sequence, the first peripheral device **704** generates a notification and transmits the notification to one or more devices within a short-range wireless communication range **714** of the first peripheral device **704**. As illustrated, a second peripheral device **706** is within the communication range **714**, but the first controllable device **702** is not. As discussed in further detail below, the notification may include all of the information needed to describe the event, or the second peripheral device **706** may, upon receiving the notification, request further information from the first peripheral device **704**.

(42) At a second point in the communication sequence, the second peripheral device **706** retransmits the notification originally generated by the first peripheral device **704** to other devices within a communication range **712** of the second peripheral device **706**. For example, the first controllable device **702** is within the communication range **712** of the second peripheral device **706**. Accordingly, the first controllable device **702** receives the notification from the second peripheral device **706**. As discussed in further detail below, in some embodiments the notification transmitted by the second peripheral device **706** may be the same notification as that originally transmitted by the first peripheral device **704** and so appears to the first controllable device **702** as having been transmitted by the first peripheral device **704**. In some embodiments, the second peripheral device **706** may generate a new notification based on the notification received from the first peripheral device **704**, and transmit that new notification to the first controllable device **702**. As above, all of the information needed by the first controllable device **702** to change its setting may be included in the notification, or the first controllable device **702** may request further information from the second peripheral device **706** upon receiving the notification. In the second case, the second peripheral device **706** may respond to the request for further information with the information it retrieved from the first peripheral device **704**. The first controllable device **702** may then change one or more of its settings based on the notification and/or the information.

(43) At a third point in the communication sequence, the first controllable device **702** may itself retransmit the notification in order to ensure the broadest possible propagation of the notification despite only using short-range wireless technology. Accordingly, the notification retransmitted by the first controllable device **702** may be received by other devices within a communication range **716** of first controllable device **702**, such as a third peripheral device **708** and a second controllable device **710**. As described above, the retransmitted notification could match the original notification, or could be a new notification based on the original notification. In some embodiments, any retransmitted notification is ignored by the original peripheral device or controllable device, even if the original device is within communication range and receives the retransmitted notification. This may help to avoid exponential growth of transmitted notifications, and may save battery life on the original device by not having to fully process as many incoming notifications.

(44) As stated above, any suitable short-range wireless communication technology may be used for the communication. In some embodiments, if Bluetooth or Bluetooth Low Energy is used, the devices may form piconets and scatternets. For example, the communication range **714** may represent a piconet comprising the first peripheral device **704** and the second peripheral device **706**,

communication range **712** may represent a piconet comprising the second peripheral device **706** and the first controllable device **702**, and communication range **716** may represent a piconet comprising the first controllable device **702**, the third peripheral device **708**, and the second controllable device **710**. As such, communication ranges **712**, **714**, and **716** may be joined by their common devices to form a scatternet.

(45) In FIG. 7A, generic peripheral devices and controllable devices are discussed in order to illustrate the general types of communication that occur in some typical embodiments. FIG. 7B illustrates a similar communication topology, but describes the participating devices with more particularity in order to demonstrate a practical example of communication according to various aspects of the present disclosure. In FIG. 7B, an event is detected by a vehicle monitor peripheral device **754**. For example, the vehicle monitor peripheral device **754** may be installed in a vehicle **94**, and may include a sensor that monitors the state of the trunk of the vehicle **94**. Upon detecting that the trunk has been opened from a closed state, the vehicle monitor peripheral device **754** generates a notification.

(46) At the first point in the communication sequence, the vehicle monitor peripheral device **754** transmits the notification to devices within its communication range **764**, including light bar peripheral device **756** (but not first wearable camera device **752**). Once the light bar peripheral device **756** receives the notification, it may request further information from the vehicle peripheral device **754** based on the content of the notification. In some embodiments, the notification may simply be an alert similar to a “door ajar” warning, and so a type included in the notification indicating the “door ajar” alert may be adequate for controllable devices to make decisions regarding what settings to change. However, in some embodiments, more information may be made available by the vehicle monitor peripheral device **754** to indicate, for example, which component of the vehicle **94** is ajar and generating the alert. If the light bar peripheral device **756** determines from the notification that further information is available, then it retrieves the information from the vehicle monitor peripheral device **754**.

(47) The first wearable camera device **752** may not be within the communication range **764** of the vehicle monitor peripheral device **754** for a variety of reasons. For example, the user **92** may have travelled away from the vehicle **94**, and therefore may not be close enough to the vehicle monitor peripheral device **754**. As another example, a line of sight between the vehicle monitor peripheral device **754** and the first wearable camera device **752** may be blocked by the seats of the vehicle **94**, the engine of the vehicle **94**, or by some other item that blocks low-powered short-range wireless communication between the devices despite their relatively close proximity.

(48) At a second point in the communication sequence after the light bar peripheral device **756** has received the notification, it retransmits the notification to other devices within its communication range **762**, such as the first wearable camera device **752**. As before, the first wearable camera device **752** may request further information from the light bar peripheral device **756** if it is available. Thereafter, the first wearable camera device **752** may check or change a recording state of its camera in response to the received notification. For example, opening the trunk may indicate that the user **92** is retrieving a weapon, a testing kit, or other items used when responding to an incident that should be recorded. As such, the first wearable camera device **752** may begin recording if recording was not already happening. As another example, closing the trunk may indicate that the items have been replaced by the user **92** and the incident is over, and so the recording could be stopped.

(49) At a third point in the communication sequence, the first wearable camera device **752** itself retransmits the notification to other devices within its communication range **765**. These devices may include a weapon holster peripheral device **758** and/or a personal assistant device **760**. The notification is not itself relevant to the weapon holster peripheral device **758**, but it provides the weapon holster peripheral device **758** the opportunity to retransmit the notification. Likewise, the personal assistant device **760** may not change a setting based on the notification, but it may record

the notification, retransmit the notification via a wide-area network in order to notify a dispatch system of the event, ignore the notification completely, or take any other appropriate action.

(50) FIG. 7C illustrates another similar communication topology, in order to describe communication between other particular participating devices as another practical example of communication according to various aspects of the present disclosure. In FIG. 7C, a command peripheral device **766** receives an input via a user interface that causes a notification and optionally information to be generated representing a command. For example, a dispatcher may be sending a user **92** to the scene of an incident, and using the user interface engine of the command peripheral device **766**, the dispatcher causes the notification and optionally information to be generated that will cause the camera **752** of the user **92** to be activated.

(51) At the first point in the communication sequence, the command peripheral device **766** transmits the notification and optionally the information to the personal assistant device **760** of the user **92**. The communication range **764** of the command peripheral device **766** may indicate a wireless communication range in which the personal assistant device **760** is reachable, or it may indicate a network connection between the command peripheral device **766** and the personal assistant device **760** that traverses two or more networking technologies. For example, the command peripheral device **766** may transmit the notification to the personal assistant device **760** over a wide area network such as the Internet. The command peripheral device **766** may be connected to the Internet via a wired network, and the personal assistant device **760** may be connected to the Internet via WiFi, 3G, 4G, LTE, or any other suitable long-range wireless networking technology.

(52) From this point, the notification propagates similar to the notifications in the previously described examples. At the second point in the communication sequence, the personal assistant device **760** acts as a peripheral device or a controllable device, and transmits the notification to devices within a communication range **762** of the personal assistant device **760**, such as the first wearable camera device **752**. If the first wearable camera device **752** determines that there is further information associated with the notification, it retrieves the information from the personal assistant device **760**. The first wearable camera device **752** then changes a setting based on the notification and/or the information. If the notification is as described above and associated with a command to start recording, the first wearable camera device **752** will start recording based on the notification and/or the information.

(53) At a third point in the communication sequence, the first wearable camera device **752** may retransmit the notification to other devices within a communication range **765** of the first wearable camera device, such as a weapon holster peripheral device **758** and/or a second personal assistant device **756** associated with another user. In some embodiments wherein the original notification was addressed specifically to the first wearable camera device **752**, the first wearable camera device **752** may not retransmit the notification because it is only relevant to the first wearable camera device **752**. Even in such embodiments, other peripheral devices **706** or controllable devices **702** may be able to take action in response to the start of recording if the first wearable camera device **752** generates and transmits a new notification related to its own change in recording state.

(54) FIGS. 8A-8C are a flowchart that illustrates an exemplary embodiment of a method of transmitting and processing event notifications according to various aspects of the present disclosure. From a start block, the method **800** proceeds to block **802**, where a first peripheral device **704** detects an event. As discussed above, a wide variety of events may be detected by peripheral devices, depending on the type of peripheral device. For example, a safety sensor of a weapon peripheral device may detect changes in state of a weapon safety. As another example, a light bar sensor of a vehicle monitor peripheral device may detect a change in state of the light bar as an event. As yet another example, a command peripheral device may detect an event based upon an entry received by its user interface engine. As will be understood by one of ordinary skill in the



art, other types of events may also be detected by the peripheral devices described above or by other types of peripheral devices.

(55) At block **804**, a notification generation engine **404** of the first peripheral device **704** generates a first notification in response to the event. In some embodiments, the first notification includes a header having a standard layout that includes at least some information relating to the event and/or the first peripheral device **704**, such as one or more of a session identifier (described further below); information identifying a type, manufacturer, model, and/or serial number of the first peripheral device **704**; information identifying a type of the event; and/or an indication regarding whether more information will be made available. In some embodiments, the first notification may also include a payload with more data based on the type of the event.

(56) At optional block **806**, the notification generation engine **404** generates a first information in response to the event. The first information is kept separate from the first notification, and is stored by the first peripheral device **704** until it is requested by a device that receives the first notification. The actions of optional block **806** may be performed in embodiments wherein more information is needed to describe the event than will fit in a single notification packet; in embodiments wherein the information is desired to be communicated via a secure channel instead of via a public broadcast; in embodiments wherein the size of the first notification is intended to be minimized; or in any other suitable embodiment. The actions of block **806** are optional because in some embodiments, none of these goals is desired, and all of the data needed to adequately describe the event fits in the first notification. For example, if the first peripheral device **704** is a heartrate monitor device, a value indicating a current heartrate or heartrate range would not be sensitive information and would likely fit within the notification packet, and so the actions of optional block **806** may not be necessary.

(57) Next, at procedure block **808**, a notification transmission engine **404** of the first peripheral device **704** transmits the notification. In some embodiments, the transmission may be a broadcast receivable by any devices within communication range of the first peripheral device **704**. In some embodiments, the transmission may be directed to one or more particular devices by virtue of a previously configured setting such as a pairing between the particular devices and the first peripheral device **704**. Any suitable procedure for transmitting the notification may be used, including the procedure **900** illustrated in FIG. **9** and described in further detail below.

(58) At block **810**, the notification is received by at least one of a controllable device **702** or a second peripheral device **706**. The method **800** then proceeds to a decision block **812**, after which the remainder of the method **800** changes based on whether the notification was received by a controllable device **702** or a second peripheral device **706**. The remainder of method **800** assumes that the notification was received by exactly one controllable device **702** or second peripheral device **706** for case of discussion only. One of ordinary skill in the art will recognize that, in some embodiments, the same transmitted notification could be received by both a controllable device **702** and a second peripheral device **706**, could be received by multiple controllable devices **702**, or could be received by multiple other peripheral devices **706**, and that portions of the remainder of the method **800** may therefore be conducted concurrently by multiple receiving devices.

(59) If the notification was received by a second peripheral device **706**, then the result of the decision block **812** is NO, and the method **800** proceeds to optional block **814**. At optional block **814**, a notification repeater engine **406** of the second peripheral device **706** retrieves the first information from the first peripheral device **406**. The actions of block **814** are optional because, in some embodiments, there may not be first information to retrieve from the first peripheral device **406**. In some embodiments, the notification repeater engine **406** will request information from the first peripheral device **704** regardless of whether information is present to be retrieved. In some embodiments, the notification repeater engine **406** may determine whether or not to request information from the first peripheral device **406** based on the first notification. For example, the notification repeater engine **406** may check for an explicit indication regarding the presence or

absence of information to be retrieved in the first notification, may check a type of the first notification, may check a type of device that transmitted the first notification, and/or may use any other suitable technique.

(60) At procedure block **816**, the notification repeater engine **406** of the second peripheral device **706** retransmits the notification. Again, any suitable transmission technique may be used, including the procedure **900** described in further detail below. In some embodiments, the notification repeater engine **406** may create a new notification, and the original notification and information may be retrievable from the second peripheral device **706** as further information associated with the new notification. In some embodiments, the notification repeater engine **406** may retransmit the notification that matches the first notification, either exactly or with enough alterations such that a receiving device will contact the second peripheral device instead of the first peripheral device for the further information. The method **800** then proceeds to an end block and terminates.

(61) Returning to decision block **812**, if the first notification was received by a controllable device **702**, then the result at decision block **812** is YES, and the method **800** proceeds to a continuation terminal ("terminal A"). From terminal A (FIG. **8B**), the method **800** proceeds to block **818**, where a notification processing engine **210** of the controllable device **702** determines whether a related notification has already been processed. In some embodiments, the controllable device **702** is likely to receive duplicate notifications, because the notifications may be transmitted repeatedly for the same event to help overcome intermittent losses in connectivity (as discussed further below). To detect duplicate notifications, the controllable device **702** may save session identifiers that have previously been processed and ignore notifications after the first for a given session identifier; the controllable device **702** may ignore all notifications from a given device for a predetermined amount of time after processing a first notification; the controllable device **702** may create a fingerprint of each processed notification to compare to newly received notifications; or may use any other suitable technique.

(62) At decision block **820**, the method **800** branches based on the determination regarding whether a related notification had already been processed. If a related notification had been processed, then the received notification is a duplicate and the result of the determination at decision block **820** is YES. Thereafter, the method **800** proceeds to an end block and terminates. Otherwise, if no related notification had been processed, then the received notification is not a duplicate and the result of the determination at decision block **820** is NO. The method **800** then proceeds to block **822**, where the notification processing engine **210** authenticates the first peripheral device **704**. Authentication of the first peripheral device **704** is desirable in order to avoid allowing unauthorized malicious notifications to cause unwanted changes in settings of the controllable device **702**.

(63) Any suitable technique for authentication may be used. In some embodiments, the controllable device **702** stores a whitelist of serial numbers or other identifiers of peripheral devices **706** for which notifications will be processed, and authentication comprises ensuring that the peripheral device **706** is on the whitelist. In some embodiments, the controllable device **702** may establish an encrypted connection with the peripheral device **706** using any suitable cryptographic communication technique, including but not limited to a Diffie-Hellman elliptical curve technique and/or the like. The controllable device **702** may assume that, if the peripheral device **706** implements the cryptographic communication technique and can establish the encrypted connection, then the peripheral device **706** is authenticated. In some embodiments, this encrypted connection or tunnel may be used to exchange further information between the peripheral device **706** and the controllable device **702**. In some embodiments, a digital signature or other certificate stored on the peripheral device **706** is checked by the controllable device **702** for validity in order to authenticate the peripheral device.

(64) Assuming the first peripheral device **704** was properly authenticated, the method **800** proceeds to block **824**, where the notification processing engine **210** determines whether further information should be retrieved from the first peripheral device **704**. Similar to the discussion above with

respect to the actions of the notification repeater engine **406** of the second peripheral device, the notification processing engine **210** may use any suitable technique for determining whether further information should be retrieved from the first peripheral device **704**. In some embodiments, the notification processing engine **210** will request information from the first peripheral device **704** regardless of whether information is present to be retrieved. In some embodiments, the notification processing engine **210** may determine whether or not to request information from the first peripheral device **704** based on the first notification. For example, the notification processing engine **210** may check for an explicit indication regarding the presence or absence of information to be retrieved in the first notification, may check a type of the first notification, may check a type of device that transmitted the first notification, and/or may use any other suitable technique. In some embodiments, the notification processing engine **210** may check a whitelist of devices from which information will be requested. The whitelist may define one or more “sets” of devices to which the controllable device **702** belongs, such as a user or officer set, a vehicle set, a group set, a station set, and/or the like.

(65) At decision block **826**, the method **800** branches based on the determination regarding whether further information should be retrieved from the first peripheral device **704**. If it had been determined that further information should be retrieved from the first peripheral device **704**, then the result of the determination at decision block **826** is YES, and the method **800** proceeds to block **828**. At block **828**, the notification processing engine **210** retrieves the information from the first peripheral device **704** using any suitable technique. In some embodiments, the notification may be a Bluetooth Low Energy advertisement message, and the notification processing engine **210** may retrieve the information by transmitting a scan request packet to the first peripheral device **704**. In some embodiments, a tunnel may be established between the first peripheral device **704** and the controllable device **702**, and the further information may be retrieved using a serial transmission protocol. The method **800** then proceeds to a continuation terminal (“terminal B”). Returning to decision block **826**, if it had been determined that further information should not be retrieved from the first peripheral device **704**, then the result of the determination at decision block **826** is NO, and the method **800** proceeds directly to terminal B.

(66) From terminal B (FIG. **8C**), the method **800** proceeds to block **830**, where the notification processing engine **210** changes at least one configuration setting of the controllable device **702** based on the notification and/or the information. As one example, if the controllable device **702** is a controllable camera device **752**, then the notification processing engine **210** may cause the camera control engine **304** to change a recording state of the video sensor **302** and/or audio sensor **306** to start, pause, or stop recording based on the notification and/or the information. As another example, if the controllable camera device **752** is equipped with or can otherwise access a long-range wireless interface, the notification processing engine **210** may cause transmission of a live video or audio stream from the controllable camera device **752** to the evidence management system **102** or other remote device to be started or stopped.

(67) Further, in some embodiments changing a configuration setting may include storing or transmitting data associated with the notification and/or the information. For example, if the controllable device **702** includes a long-range wireless interface, the notification processing engine **210** may cause the controllable device **702** to transmit an SMS, an email, an API call, or any other data transmission based on the notification and/or the information to a remote device. As another example, the notification processing engine **210** may record and aggregate metadata based on the received notifications and/or information, including but not limited to identities of users associated with the notifications (in order to be able to count a total number of users within the system's communication range); a type of the peripheral device that transmitted the notification and its status (in order to be able to count, for example, a total number of activated cameras or weapons drawn in an area); a distance of the peripheral device from the controllable device **702** based on the signal strength; and or the like.

(68) Also, though single notifications are described above, in some embodiments the notification processing engine **210** may use multiple notifications and/or multiple pieces of retrieved information to make the decision regarding the change in a setting. For example, if the notification and information indicate that the trunk of a vehicle **94** associated with the user **92** is open, the notification processing engine **210** may cause other information to be retrieved to determine whether the light bar or siren is active, or whether the vehicle **94** is moving, before causing a change in video or audio recording state. As another example, if several notifications and/or pieces of retrieved information indicate that a weapon has been removed from a holster and the trunk is open, then the video recording state may not be changed (due to the likelihood that the user **92** is merely placing the weapon in the trunk as opposed to using the weapon to apply force. As still another example, if several notifications and or pieces of retrieved information indicate that the user **92** has returned to the driver's seat of the vehicle **94** and that the user's holster is empty, then the notification processing engine **210** may cause a warning message to be transmitted or displayed.

(69) At optional block **832**, the notification processing engine **210** stores an indication of the notification and/or the information (depending on whether additional information was retrieved) in an audit trail data store **316** of the controllable device **702**. The actions at block **832** are optional because not all embodiments of a controllable device **702** will include an audit trail data store **316**, but may instead apply the configuration setting change without storing a record of the change, the notification, or the information. In some embodiments, instead of storing the notification and/or the information in an audit trail data store **316**, the notification processing engine **210** may add data from the notification and/or the information to data recorded by the controllable device **702** or metadata associated with data recorded by the controllable device **702**, including but not limited to metadata associated with video data or audio data.

(70) The method **800** then proceeds to decision block **834**, where a determination is made regarding whether the controllable device **702** should retransmit the notification and/or the information. In some embodiments, the controllable device **702** may retransmit all notifications, as does the peripheral device **706**. In some embodiments, the controllable device **702** may filter some notifications and may not retransmit them. For example, in some embodiments, the notification processing engine **210** may detect that a notification was addressed specifically to the controllable device **702**, and may therefore not retransmit it because it will not be relevant to other devices. As another example, in some embodiments, the notification processing engine **210** may not retransmit notifications of certain types or from certain types of devices.

(71) If the determination at decision block **834** is that the controllable device **702** should retransmit the notification, then the result of decision block **834** is YES, and the method **800** proceeds to procedure block **836**, where a notification repeater engine **208** of the controllable device **702** retransmits the notification. Again, any suitable transmission technique may be used, including the procedure **900** described in further detail below. In some embodiments, the notification repeater engine **208** may create a new notification, and the original notification and information may be retrievable from the controllable device **702** as further information associated with the new notification. In some embodiments, the notification repeater engine **208** may retransmit the notification that matches the first notification, either exactly or with enough alterations such that a receiving device will contact the first peripheral device instead of the controllable device **702** for the further information. The method **800** then proceeds to optional block **838**. Returning to decision block **834**, if the determination is that the controllable device **702** should not retransmit the notification, then the result of decision block **834** is NO, and the method **800** proceeds directly to optional block **838**.

(72) At optional block **838**, the controllable device **702** transmits notifications and/or information from the audit trail data store **316** to an evidence management system **102**. The information may be transmitted from the audit trail data store **316** to the evidence management system **102** using any

suitable technique, including via an evidence collection dock **104** or via an ad-hoc wireless communication path. In some embodiments, urgent notifications and/or information may be transmitted to the evidence management system **102** via the ad-hoc wireless communication path, including via a coordinator computing device, as soon as possible after the receipt of the notification and/or information whether or not it is stored in the audit trail data store **316**. The actions described at block **838** are optional because not all embodiments transmit information to an evidence management system **102**, nor do all embodiments include an audit trail data store **316**. The method **800** then proceeds to an end block and terminates.

(73) FIG. **9** is a flowchart that illustrates a procedure for transmitting a notification from a device according to various aspects of the present disclosure. As discussed above, the procedure **900** is suitable for use by a peripheral device **706** or a controllable device **702**, as discussed in blocks **808**, **816**, and **836** of the method **800** described above. Because similar steps would be performed by either device at any of these blocks **808**, **816**, and **836**, separate descriptions of each block are not provided.

(74) The technique described in the procedure **900** has many advantages. For example, the procedure **900** can overcome issues with intermittent connectivity, which may be caused by an intermittent lack of line of sight between devices, devices intermittently moving out of communication range of each other, and/or the like. For example, if a low-power short-range wireless communication technique is used, the line of sight may be blocked by the user's body, the frame of a vehicle, and/or the like. As another example, the devices may travel into and out of range of each other during an activity such as a foot pursuit, a traffic stop, and/or the like. As another example of an advantage, the short periods for which notifications are transmitted helps to strike a balance that reduces power consumption and thereby increases battery life. As yet another example of an advantage, the use of sessions (as described below) may help allow receiving devices to ignore duplicate notifications, thereby further reducing processing and power drains.

(75) From a start block, the procedure **900** advances to block **902**, where the device creates a new session for the notification. In some embodiments, the new session is identified by a session identifier. In some embodiments, creating the new session may simply increment a session identifier value based on a previous session identifier value for the device. In some embodiments, the device may randomly choose a session identifier or use an unpredictable but deterministic sequence of session identifier values, such as the output of a pseudo-random number generator for a given seed, so that a receiving device can compare the session identifier value to an expected next session identifier value for authentication purposes.

(76) At block **904**, the device transmits the notification to other devices within communication range of the device. In some embodiments, the notification may be a broadcast transmission or otherwise unaddressed, such that any device within communication range may receive and process the notification. In some embodiments, the notification may be addressed or otherwise directed to one or more particular devices, such as devices that had previously been paired to the transmitting device, devices that are the particular target of the notification, and/or the like. In some embodiments, the notification may be transmitted using a radio frequency communication technique. In some embodiments, the radio frequency used may be in the 2.4 GHz band in order to avoid interference with police bands used for other equipment. In some embodiments, the notification may be transmitted using a short-range wireless networking technology, such as Bluetooth or Bluetooth Low Energy. In some embodiments, wired communication and/or long-range wireless communication may be used to implement at least part of the communication path used to transmit the notification. For example, the transmitting device may be a command peripheral device **602** operated by a dispatcher on a wired network, and the notification may be addressed to a peripheral device **706** or a controllable device **702** in the field, such as a smart phone device or a controllable camera device **752** having a long-range wireless interface such as LTE or WiFi.

(77) In some embodiments, the notification may be included in a Bluetooth Low Energy advertisement message as defined by the respective protocol. Some portions of the message format may be defined by the systems designer (e.g., the predefined sequence of information in the payload, the quantity of bits predefined to convey various information in the payload, and/or the like). In some embodiments, the format described below in Table 1 may be used. Other embodiments, according to various aspects of the present disclosure, may use a different sequence of information in the payload. Still other embodiments, according to various aspects of the present disclosure, use different quantities of bits for information in the payload. Shorter payloads permit more messages to be sent and received per unit time.

(78) TABLE-US-00001 TABLE 1 Bit Position Name Description and Alternatives 1-8 Preamble Tunes receiver; defined by protocol 9-40 Access address Distinguishes an intended message from noise; defined by protocol 41-48 Header Packet type defined by protocol 49-56 Length Number of bits in the Payload 57-353 Payload See following rows 57-88 Sender A code number, a more meaningful coded text manufacturer abbreviation 89-100 Sender model A code number, a more meaningful coded text abbreviation 101-148 Sender serial A binary integer, a code comprising digits, a code number comprising characters 149-164 Sender faults A set of binary true/false values each conveying a predetermined fault condition in the transmitting device 165-180 Session A binary integer identifier 181-200 Status A set of bits providing data that carries status information regarding the device (or an event detected by the device) 201-353 reserved May be omitted from the message 353-376 CRC Cyclic redundancy check code for the message or for one or more suitable portions of the message (e.g., header, length, payload, portion of the payload)

(79) After transmitting the notification, the procedure **900** waits for a predetermined amount of time. The amount of time for which the procedure **900** waits may be configurable by an administrator or designer of the system in order to balance battery life with a likelihood of successful communication (shorter wait times increase the likelihood of successful communication, but reduce battery life). In some embodiments, the amount of time may be a value in the range of 1-10 seconds, such as 5 seconds. In some embodiments, an extra random delay interval between 0 and 10 ms may be added to the amount of time to help avoid collisions between notifications.

(80) After waiting, the procedure **900** then proceeds to a decision block **906**, where a determination is made regarding whether a predetermined amount of time has elapsed since the creation of the new session. In some embodiments, the predetermined amount of time may be configurable by an administrator or designer of the system; in some embodiments, the predetermined amount of time may be a value in the range of 20-60 seconds, such as 30 seconds. Again, longer sessions increase likelihood of successful communication, but reduce battery life on both the transmitter and receiver.

(81) If the predetermined amount of time has not elapsed since the creation of the new session, then the result of the determination at decision block **906** is NO, and the procedure **900** returns to block **904**. Otherwise, if the predetermined amount of time has elapsed, then the result of the determination at decision block **906** is YES, and the procedure **900** advances to block **908**, where the device ends the new session associated with the notification. Once the new session ends, no more transmissions will be made using the session identifier. In some embodiments, the end of a session also stops the transmission of further notifications until the procedure **900** is executed a subsequent time. In some embodiments, events other than the elapsing of the predetermined amount of time may cause session to end. For example, in some embodiments, a new event that supersedes the previous event, such as another change in camera or light bar state, or crossing an additional heart rate threshold, may cause the session to end so that a new session can be started. As another example, in some embodiments, a confirmed receipt by a targeted recipient device may cause the session to end.

(82) The procedure **900** then proceeds to an end block and terminates.

(83) FIG. **10** is a block diagram that illustrates aspects of an exemplary computing device

appropriate for use as a computing device of the present disclosure. While multiple different types of computing devices were discussed above, the exemplary computing device **1000** describes various elements that are common to many different types of computing devices. While FIG. **10** is described with reference to a computing device that is implemented as a device on a network, the description below is applicable to servers, personal computers, mobile phones, smart phones, tablet computers, embedded computing devices, and other devices that may be used to implement portions of embodiments of the present disclosure. Moreover, those of ordinary skill in the art and others will recognize that the computing device **1000** may be any one of any number of currently available or yet to be developed devices.

(84) In its most basic configuration, the computing device **1000** includes at least one processor **1002** and a system memory **1004** connected by a communication bus **1006**. Depending on the exact configuration and type of device, the system memory **1004** may be volatile or nonvolatile memory, such as read only memory (“ROM”), random access memory (“RAM”), EEPROM, flash memory, or similar memory technology. Those of ordinary skill in the art and others will recognize that system memory **1004** typically stores data and/or program modules that are immediately accessible to and/or currently being operated on by the processor **1002**. In this regard, the processor **1002** may serve as a computational center of the computing device **1000** by supporting the execution of instructions.

(85) As further illustrated in FIG. **10**, the computing device **1000** may include a network interface **1010** comprising one or more components for communicating with other devices over a network. Embodiments of the present disclosure may access basic services that utilize the network interface **1010** to perform communications using common network protocols. The network interface **1010** may also include a wireless network interface configured to communicate via one or more wireless communication protocols, such as WiFi, 2G, 3G, LTE, WiMAX, Bluetooth, and/or the like. As will be appreciated by one of ordinary skill in the art, the network interface **1010** illustrated in FIG. **10** may represent one or more wireless interfaces or physical communication interfaces described and illustrated above with respect to particular components of the system **100**.

(86) In the exemplary embodiment depicted in FIG. **10**, the computing device **1000** also includes a storage medium **1008**. However, services may be accessed using a computing device that does not include means for persisting data to a local storage medium. Therefore, the storage medium **1008** depicted in FIG. **10** is represented with a dashed line to indicate that the storage medium **1008** is optional. In any event, the storage medium **1008** may be volatile or nonvolatile, removable or nonremovable, implemented using any technology capable of storing information such as, but not limited to, a hard drive, solid state drive, CD ROM, DVD, or other disk storage, magnetic cassettes, magnetic tape, magnetic disk storage, and/or the like.

(87) As used herein, the term “computer-readable medium” includes volatile and non-volatile and removable and non-removable media implemented in any method or technology capable of storing information, such as computer readable instructions, data structures, program modules, or other data. In this regard, the system memory **1004** and storage medium **1008** depicted in FIG. **10** are merely examples of computer-readable media.

(88) Suitable implementations of computing devices that include a processor **1002**, system memory **1004**, communication bus **1006**, storage medium **1008**, and network interface **1010** are known and commercially available. For ease of illustration and because it is not important for an understanding of the claimed subject matter, FIG. **10** does not show some of the typical components of many computing devices. In this regard, the computing device **1000** may include input devices, such as a keyboard, keypad, mouse, microphone, touch input device, touch screen, tablet, and/or the like. Such input devices may be coupled to the computing device **1000** by wired or wireless connections including RF, infrared, serial, parallel, Bluetooth, USB, or other suitable connections protocols using wireless or physical connections. Similarly, the computing device **1000** may also include output devices such as a display, speakers, printer, etc. Since these devices are well known in the

art, they are not illustrated or described further herein.

(89) While illustrative embodiments have been illustrated and described, it will be appreciated that various changes can be made therein without departing from the spirit and scope of the invention.

## Claims

1. A system for changing configuration settings on controllable devices in response to automatically detected events, the system comprising: a peripheral device comprising at least one sensor, a first processor, and a first short-range wireless interface, the first processor configured to perform first operations comprising: detecting, via the at least one sensor, a change in a first status of the peripheral device via the at least one sensor; automatically generating a first notification in response to detecting the change in the first status of the peripheral device, the first notification including information indicating that the first status of the peripheral device has changed; and transmitting the first notification via the first short-range wireless interface; a first controllable camera device comprising a first video sensor, a second processor, and a second short-range wireless interface, the second processor configured to perform second operations comprising: collecting first video data via the first video sensor; receiving the first notification from the peripheral device via the second short-range wireless interface; making a first determination whether a first configuration setting of the first controllable camera device should be changed in response to the information indicating that the first status of the peripheral device has changed; in accordance with the first determination indicating that the first configuration setting of the first controllable camera device should be changed, changing the first configuration setting of the first controllable camera device; and based on the first notification, transmitting, via the second short-range wireless interface, a second notification, wherein the second notification includes the information indicating that the first status of the peripheral device has changed; and a second controllable device comprising a third short-range wireless interface and a third processor, the third processor configured to perform third operations comprising: receiving the second notification from the first controllable camera device via the third short-range wireless interface; making a second determination whether a second configuration setting of the second controllable device should be changed in response to the information indicating that the first status of the peripheral device has changed; and in accordance with the second determination indicating that the second configuration setting of the second controllable device should be changed, changing the second configuration setting of the second controllable device.
2. The system of claim 1, wherein the second controllable device comprises a second controllable camera device comprising a second video sensor.
3. The system of claim 2, wherein changing the second configuration setting of the second controllable device comprises changing a recording state of the second video sensor.
4. The system of claim 1, wherein the second operations further comprise generating a new notification based on the first notification, and wherein transmitting the second notification comprises transmitting the new notification.
5. The system of claim 1, wherein transmitting the second notification comprises retransmitting the first notification.
6. The system of claim 1, wherein the first controllable camera device comprises a video data store; and changing the first configuration setting of the first controllable camera device comprises causing the first video data to be saved in the video data store.
7. The system of claim 1, wherein the first controllable camera device comprises a first long-range wireless interface; and changing the first configuration setting of the first controllable camera device comprises: starting transmission of a first live video stream from the first controllable camera device via the first long-range wireless interface; or transmitting first data based on the information indicating that the first status of the peripheral device has changed from the first long-



range wireless interface to a remote device.

8. The system of claim 1, wherein the second operations further comprise: receiving a third notification via the second short-range wireless interface; detecting the third notification is a duplicate of the first notification; and in accordance with detecting the third notification is the duplicate of the first notification, ignoring the third notification.

9. The system of claim 1, wherein changing the first configuration setting comprises recording the first video data.

10. The system of claim 1, wherein the peripheral device is one of a weapon peripheral device, a weapon holster peripheral device, a vehicle monitor peripheral device, and a personal monitor peripheral device.

11. The system of claim 1, wherein each of the first notification and the second notification are unaddressed.

12. The system of claim 1, wherein the first notification further comprises information identifying a type of the peripheral device; making the first determination comprises making the first determination based on the information indicating that the first status of the peripheral device has changed and the information identifying the type of the peripheral device; and making the second determination comprises making the second determination based on the information indicating that the first status of the peripheral device has changed and the information identifying the type of the peripheral device.

13. The system of claim 1, wherein the peripheral device comprises a vehicle monitor peripheral device and the at least one sensor comprises an analog voltage sensor.

14. The system of claim 1, wherein transmitting the first notification comprises repeatedly transmitting the first notification for a predetermined amount of time.

15. The system of claim 14, wherein the first operations comprise generating a session identifier, the first notification includes the session identifier, and repeatedly transmitting the first notification includes repeatedly transmitting the session identifier in the first notification.

16. The system of claim 1, wherein transmitting the first notification comprises: repeatedly transmitting the first notification until a change in a second status is detected, wherein the change in the second status supersedes the change in the first status; and ending a session during which the first notification is repeatedly transmitted, wherein ending the session comprises stopping transmitting of the first notification.

17. A method of distributed control performed by a peripheral device, a first controllable camera device, and a second controllable camera device, the method comprising: detecting, by the peripheral device, a change in status of the peripheral device based on first data generated by one or more sensors of the peripheral device; automatically generating, by the peripheral device, a first notification in response to detecting the change in the status of the peripheral device, wherein the first notification includes information indicating that the status of the peripheral device has changed; transmitting, by the peripheral device, the first notification via a first short-range wireless interface of the peripheral device; receiving, by the first controllable camera device, the first notification from the peripheral device via a second short-range wireless interface of the first controllable camera device; determining, by a processor of the first controllable camera device, that a configuration setting of the first controllable camera device should be changed based on the information indicating that the status of the peripheral device has changed; changing, by the processor of the first controllable camera device, the configuration setting of the first controllable camera device in response to determining by the processor of the first controllable camera device that the configuration setting of the first controllable camera device should be changed; transmitting, by the first controllable camera device, a second notification via the second short-range wireless interface of the first controllable camera device; receiving, by the second controllable camera device, the second notification from the first controllable camera device via a third short-range wireless interface of the second controllable camera device; determining, by a

processor of the second controllable camera device, that a configuration setting of the second controllable camera device should be changed based on the information indicating that the status of the peripheral device has changed; and changing, by the processor of the second controllable camera device, the configuration setting of the second controllable camera device in response to determining by the processor of the second controllable camera device that the configuration setting of the second controllable camera device should be changed, wherein the peripheral device is one of a weapon peripheral device, a weapon holster peripheral device, and a vehicle monitor peripheral device.

18. The method of claim 17, wherein transmitting the second notification comprises retransmitting the first notification.

19. The method of claim 17, wherein changing of the configuration setting of the first controllable camera device comprises at least one of saving video data collected by a video sensor of the first controllable camera device in a data store of the first controllable camera device, starting transmission of a live video stream from the first controllable camera device via a first long-range wireless interface of the first controllable camera device, or transmitting first data based on the information indicating that the status of the peripheral device has changed from the first long-range wireless interface of the first controllable camera device to a remote device; and changing of the configuration setting of the second controllable camera device comprises at least one of saving video data collected by a video sensor of the second controllable camera device in a data store of the second controllable camera device, starting transmission of a live video stream from the second controllable camera device via a second long-range wireless interface of the second controllable camera device, or transmitting second data based on the information indicating that the status of the peripheral device has changed from the second long-range wireless interface of the second controllable camera device to the remote device.

20. The method of claim 19, wherein the first notification includes a session identifier generated by the peripheral device and transmitting the first notification includes repeatedly transmitting the first notification comprising the session identifier for a predetermined amount of time.

---