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(54) **AUGMENTED REALITY AND LOCATION DETERMINATION METHODS AND APPARATUS**

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G08B 1/08 (2006.01)

(52) **U.S. Cl.**
USPC **340/539.13**; 340/539.1; 340/539.16

(58) **Field of Classification Search**
USPC 340/539.13
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,952,969	A *	9/1999	Hagerman et al.	342/457
6,064,335	A	5/2000	Eschenbach	
6,124,825	A	9/2000	Eschenbach	
8,094,833	B2	1/2012	Mao et al.	
2004/0239756	A1	12/2004	Aliaga et al.	
2005/0124293	A1	6/2005	Alicherry et al.	
2005/0192024	A1 *	9/2005	Sheynblat	455/456.1
2007/0202838	A1	8/2007	Zancola et al.	
2008/0211813	A1 *	9/2008	Jamwal et al.	345/426
2008/0280624	A1 *	11/2008	Wrappe	455/456.1

2008/0300854	A1	12/2008	Eibye	
2009/0135002	A1	5/2009	Blinnikka et al.	
2009/0244097	A1	10/2009	Estevez	
2010/0109864	A1	5/2010	Haartsen et al.	
2010/0277310	A1 *	11/2010	Imae	340/539.13
2010/0289640	A1	11/2010	Annamalai	
2010/0315418	A1	12/2010	Woo	
2012/0025974	A1	2/2012	Richey et al.	
2012/0025975	A1	2/2012	Richey et al.	

FOREIGN PATENT DOCUMENTS

WO PCT/US2011/045586 3/2012

OTHER PUBLICATIONS

“Micello Indoor Maps Service for iPhone Users”; Dec. 30, 2009; 11 pp.; www.mydigitallife.info/2009/09/27/micello-indoor-maps-service-for-iphone-users/.

“apc Nokia working on ‘indoor GPS’ system”; Flynn, D.; http://apcmag.com/print.aspx?id=3038&mode=print; Dec. 30, 2009; 1 pp.

“Fast Approximate Nearest Neighbors With Automatic Algorithm Configuration”; Muja et al.; 2009; 10 pp.

“Speeded-Up Robust Features (SURF)”; Bay et al.; Sep. 10, 2008; pp. 1-14.

* cited by examiner

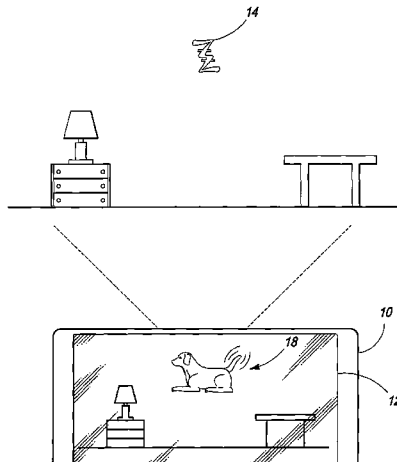
Primary Examiner — Kerri McNally

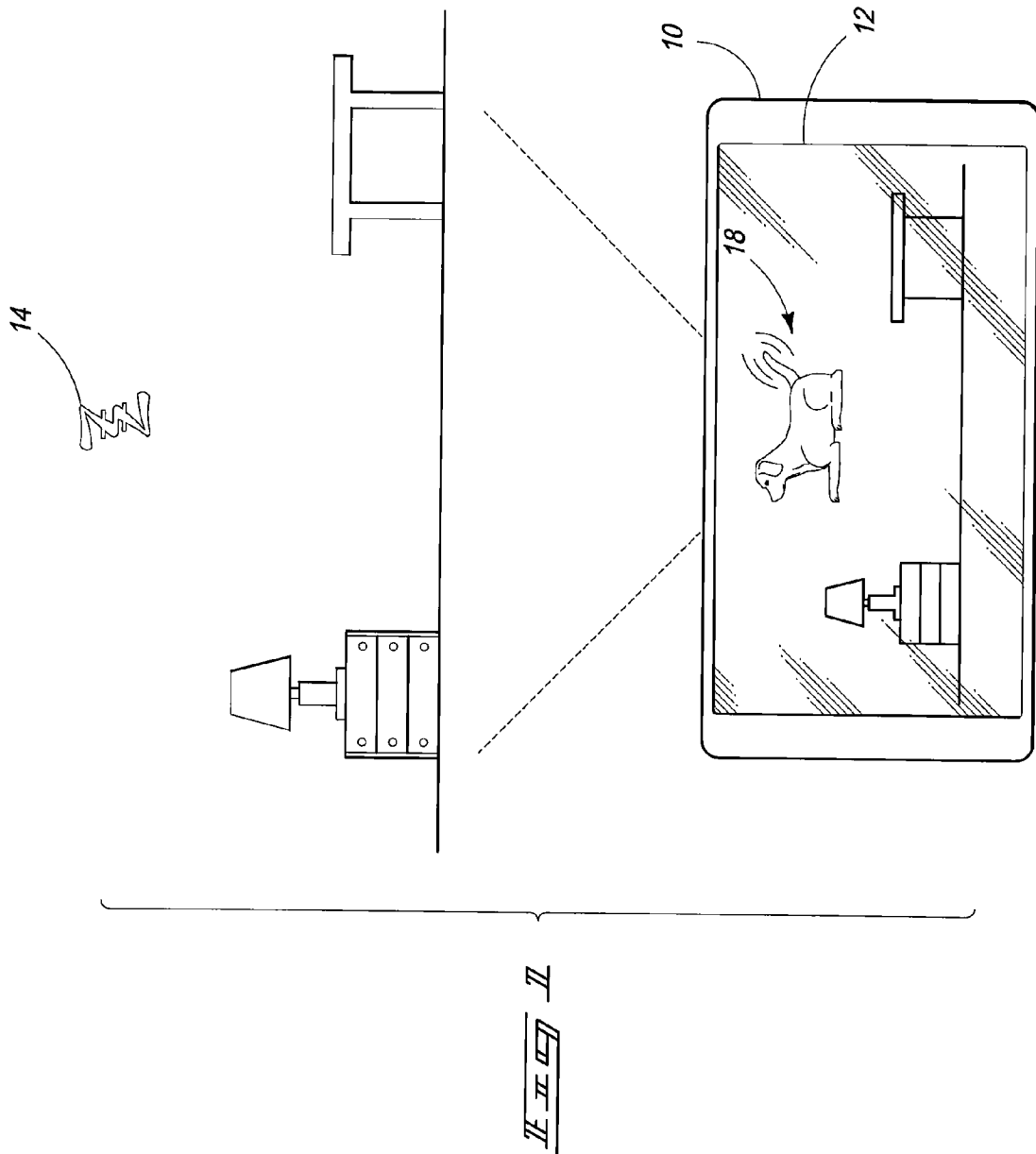
(74) Attorney, Agent, or Firm — Wells St. John P.S.

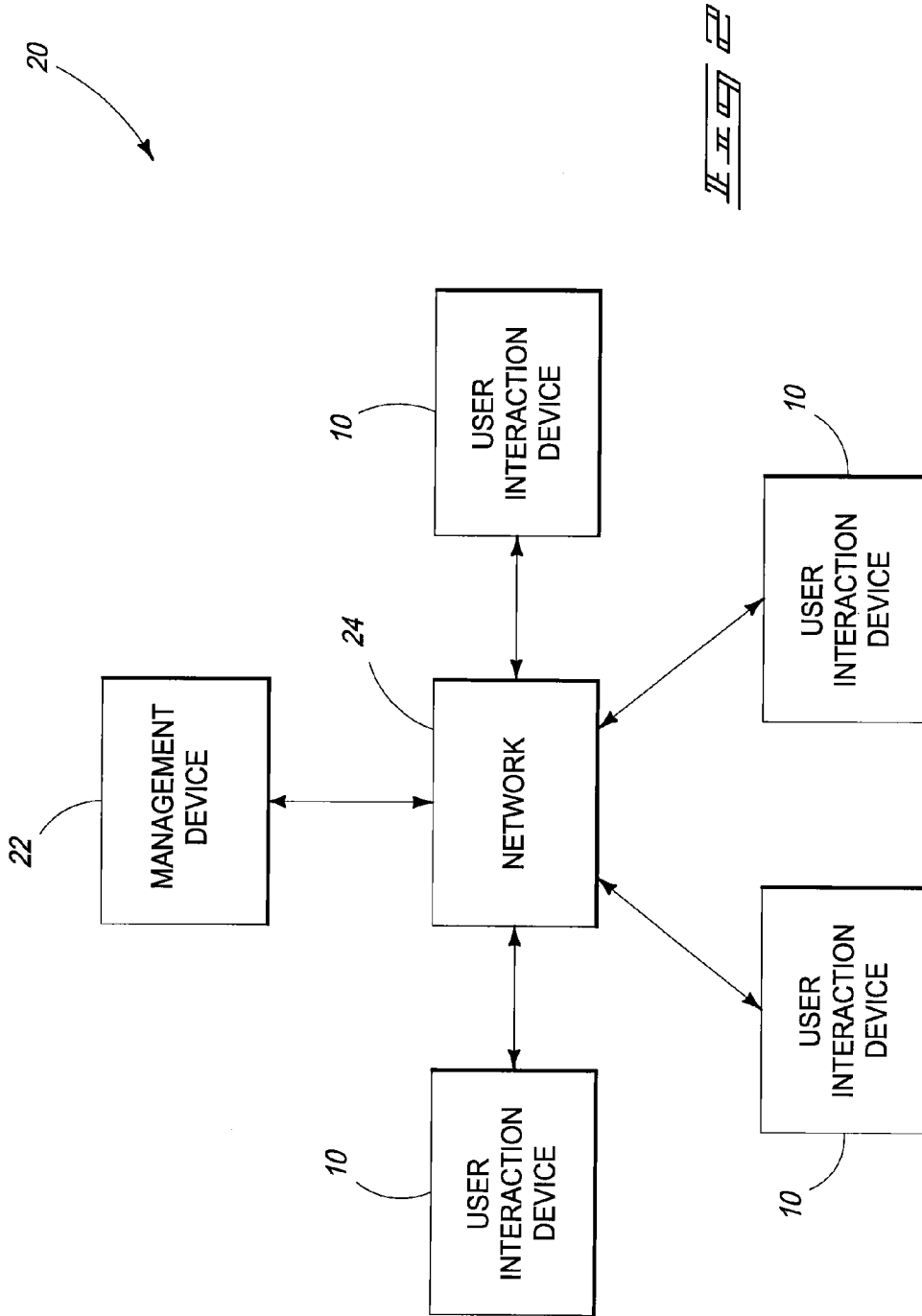
(57) **ABSTRACT**

Augmented reality and location determination methods and apparatus are disclosed according to some aspects of the description. In one aspect, an augmented reality method includes accessing first location information regarding a location of a user interaction device in a physical world, wherein the user interaction device is configured to generate an augmented reality representation with respect to the physical world, using the first location information, generating second location information which has increased accuracy regarding the location of the user interaction device in the physical world, and communicating augmented data to the user interaction device, and wherein the augmented data comprises the augmented reality representation.

30 Claims, 11 Drawing Sheets







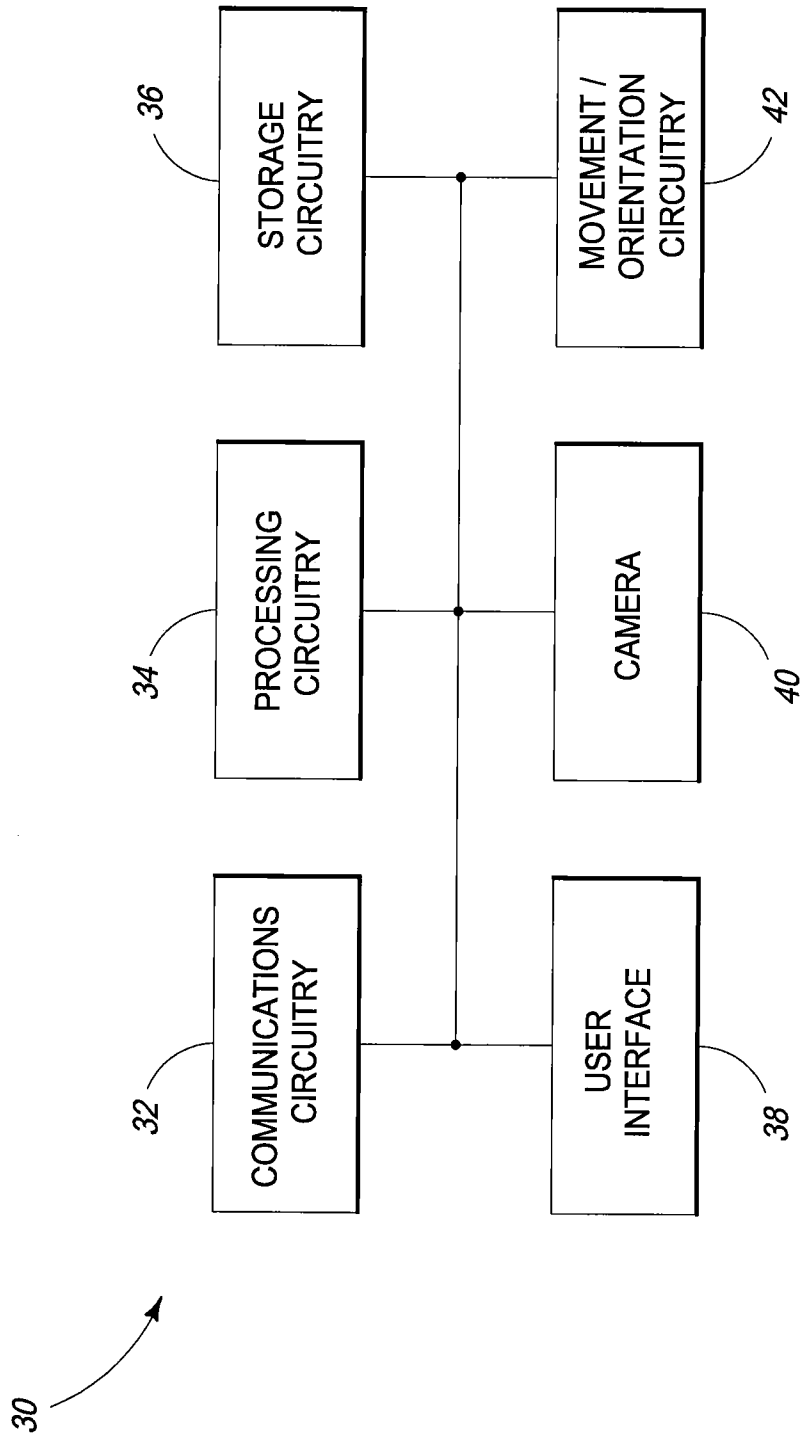
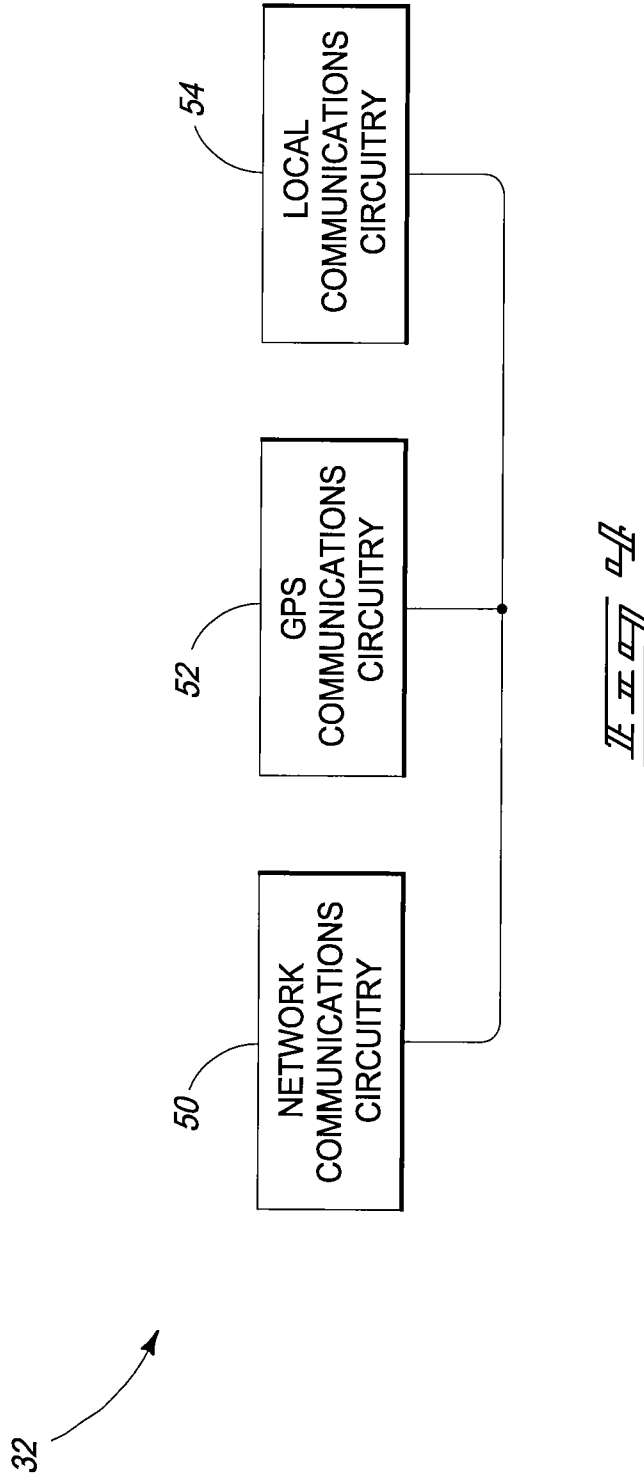


FIG. 3



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