

Exhibit 2105

(12) **United States Patent**
Fitch et al.

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(54) **MULTIPLE INPUT DATA MANAGEMENT FOR WIRELESS LOCATION-BASED APPLICATIONS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/396,235**

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Related U.S. Application Data

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(51) **Int. Cl.**⁷ **H04Q 7/20**

(52) **U.S. Cl.** **455/456; 342/357**

(58) **Field of Search** 455/456, 422, 455/457, 517; 342/357, 450, 457

(56) **References Cited**

U.S. PATENT DOCUMENTS

Re. 35,916	10/1998	Dennison et al.	455/456
4,700,374	10/1987	Bini	379/60
5,043,736	8/1991	Darnell et al.	342/357
5,208,756	5/1993	Song	364/449
5,223,844 *	6/1993	Mansell et al.	455/456
5,235,633	8/1993	Dennison et al.	379/60
5,317,323	5/1994	Kennedy et al.	342/457
5,327,144 *	7/1994	Stilp et al.	342/457
5,388,147	2/1995	Grimes	379/59
5,479,482	12/1995	Grimes	379/59
5,515,419	5/1996	Sheffer et al.	379/58
5,537,460	7/1996	Holliday, Jr. et al.	379/59
5,546,445	8/1996	Dennison et al.	379/60
5,600,706 *	2/1997	Dunn et al.	342/450

5,608,410 *	3/1997	Stilp et al.	342/457
5,625,668	4/1997	Loomis et al.	379/58
5,673,322	9/1997	Pepe et al.	380/49
5,724,660 *	3/1998	Kauser et al.	455/456
5,732,354 *	3/1998	MacDonald	455/456
5,754,955	5/1998	Ekbani	455/422
5,815,814	9/1998	Dennison et al.	455/456
5,835,907 *	11/1998	Newman	455/456
5,844,522 *	12/1998	Sheffer et al.	342/457
5,999,126 *	12/1999	Ito	455/456
6,097,958 *	8/2000	Bergen	455/456
6,108,555 *	8/2000	Maloney et al.	455/456

FOREIGN PATENT DOCUMENTS

WO 98/10307	3/1998	(WO)	G01S/3/02
WO 98/10538	3/1998	(WO)	H04B/7/26

* cited by examiner

Primary Examiner—Nay Maung

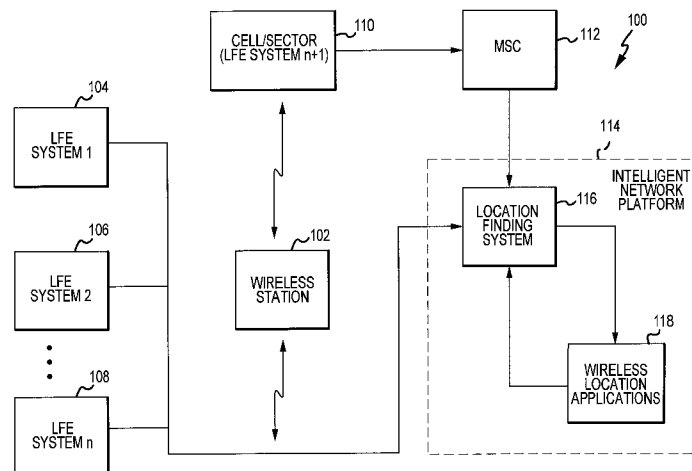
Assistant Examiner—Quochien B. Vuong

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(57) **ABSTRACT**

Multiple location finding equipment (LFE) inputs are used to enhance the location information made available to wireless location-based applications. In one implementation, the invention is implemented in a wireless network including an MSC (112) for use in routing communications to or from wireless stations (102), a network platform (114) associated with the MSC (112), and a variety of LFE systems (104, 106, 108 and 110). A Location Finding System (LFS) (116) in accordance with the present invention is resident on the platform (114). The LFS (116) receives location information from the LFEs (104, 106, 108 and 110) and provides location information to wireless location based applications (118). In this regard, the LFS (116) can receive input information at varying time intervals of varying accuracies and in various formats, and can provide standardized outputs to the applications (118), for example, depending on the needs of the applications (118). Multiple inputs may also be co-processed for enhanced accuracy.

20 Claims, 8 Drawing Sheets



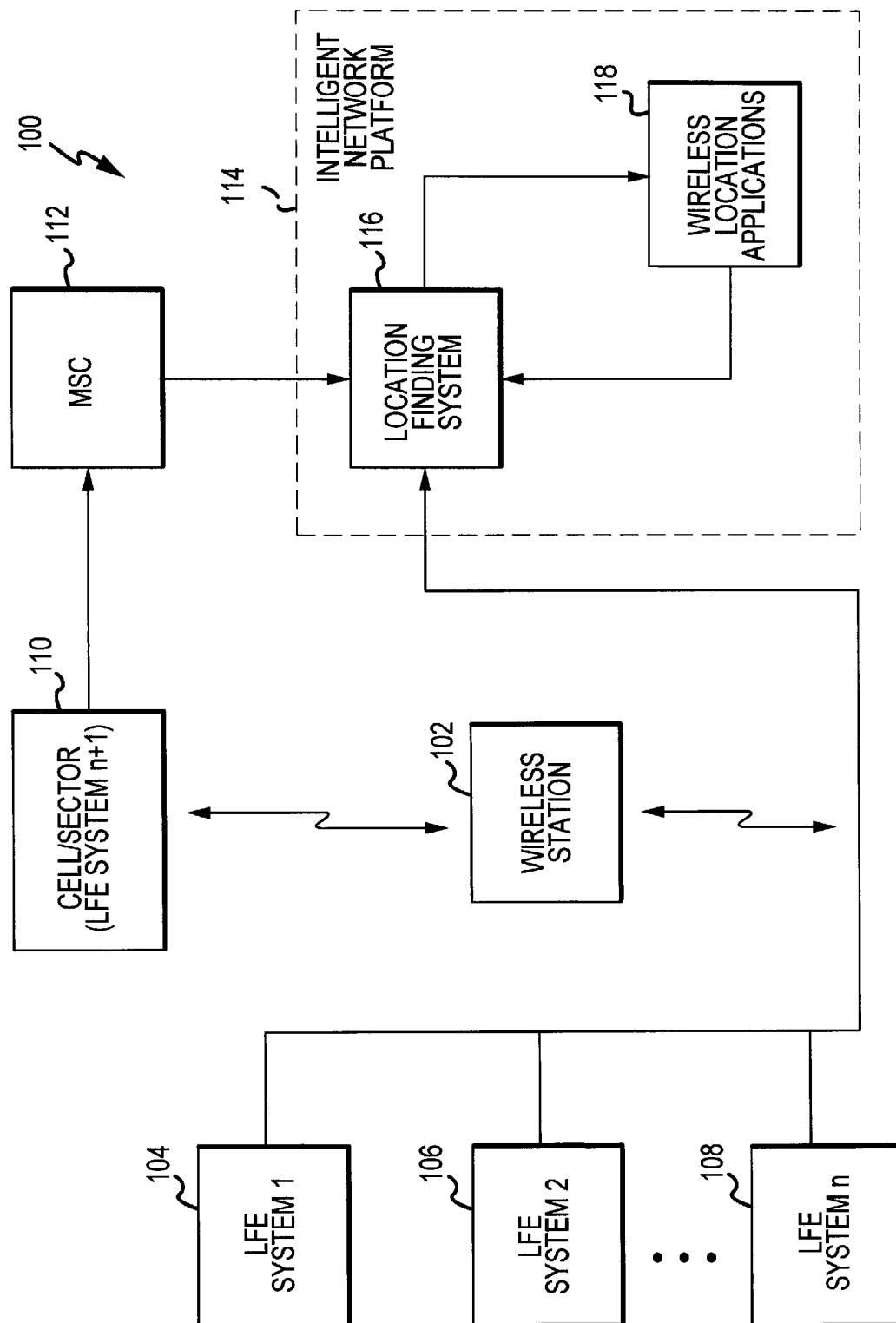


FIG. 1

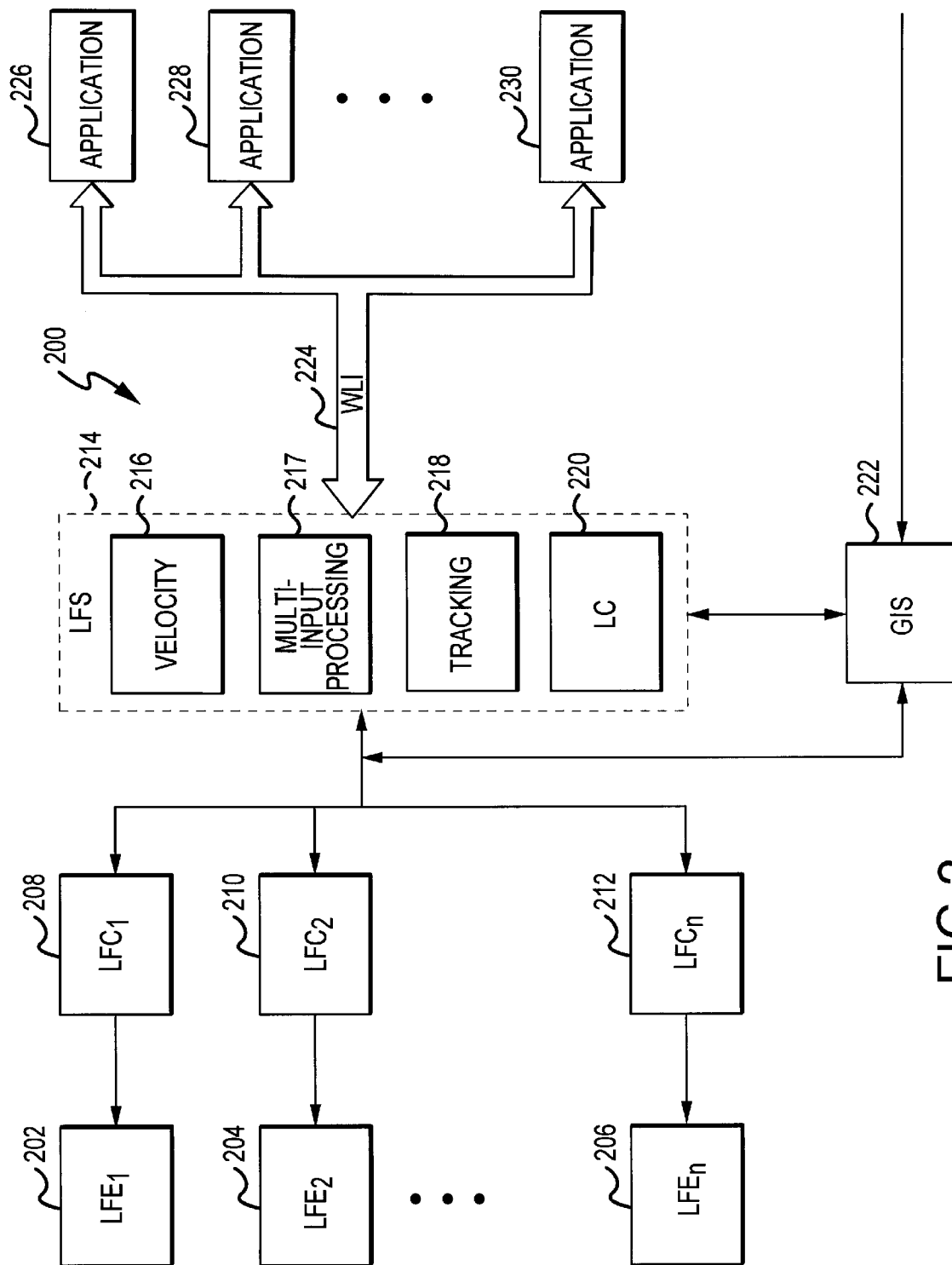


FIG. 2

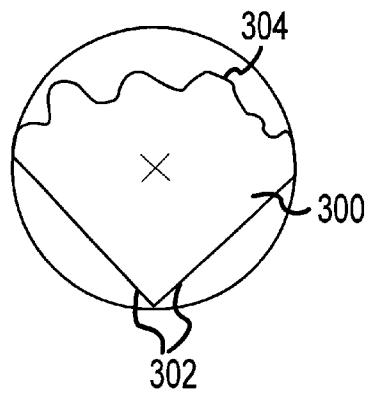


FIG. 3A

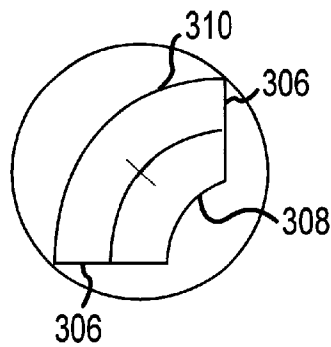


FIG. 3B

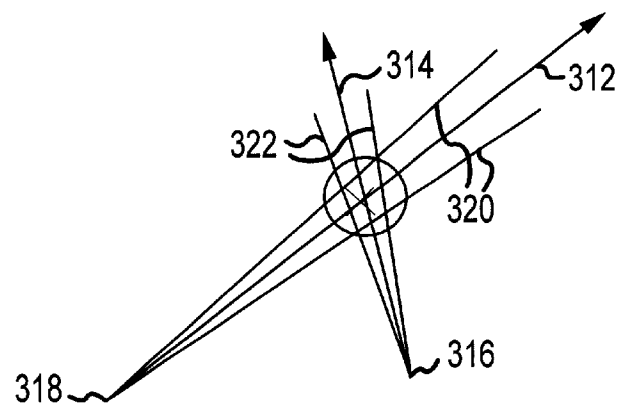


FIG. 3C

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