



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

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

(75) Inventors: **James Fitch**, Edmonds, WA (US); **David L. Hose**, Boulder; **Michael McKnight**, Westminster, both of CO (US)

(73) Assignee: **Signal Soft Corporation**, Boulder, CO (US)

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(22) Filed: **Sep. 15, 1999**

**Related U.S. Application Data**

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(51) **Int. Cl.**<sup>7</sup> ..... **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

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*Primary Examiner*—Nay Maung

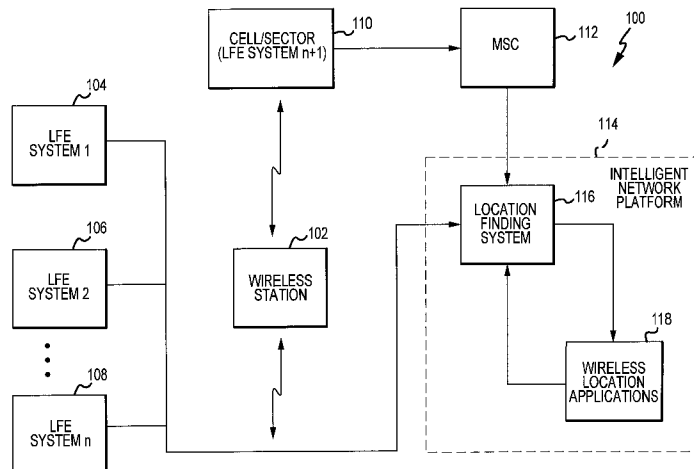
*Assistant Examiner*—Quochien B. Vuong

(74) *Attorney, Agent, or Firm*—Marsh Fischmann & Breyfogle LLP

(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**



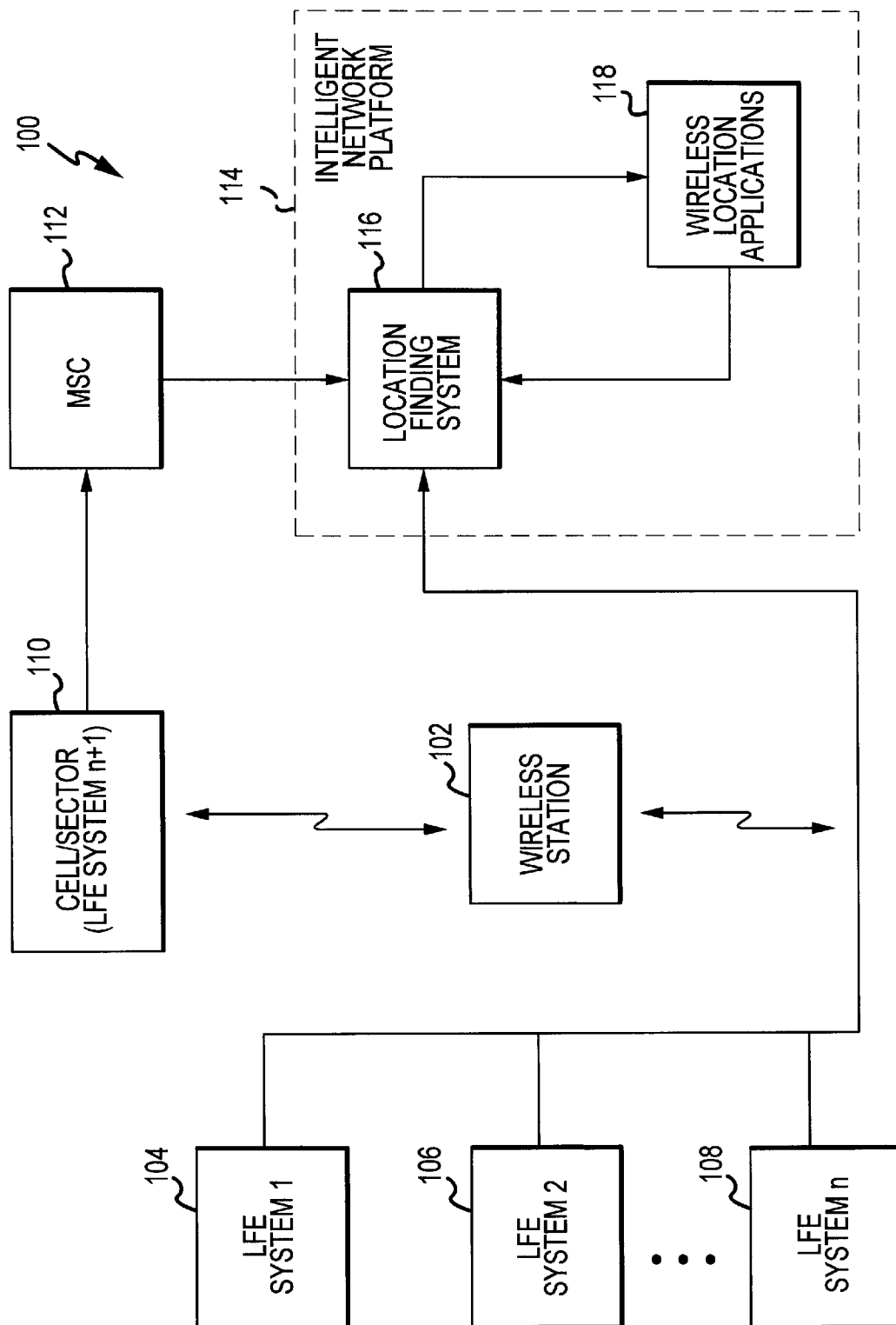


FIG. 1

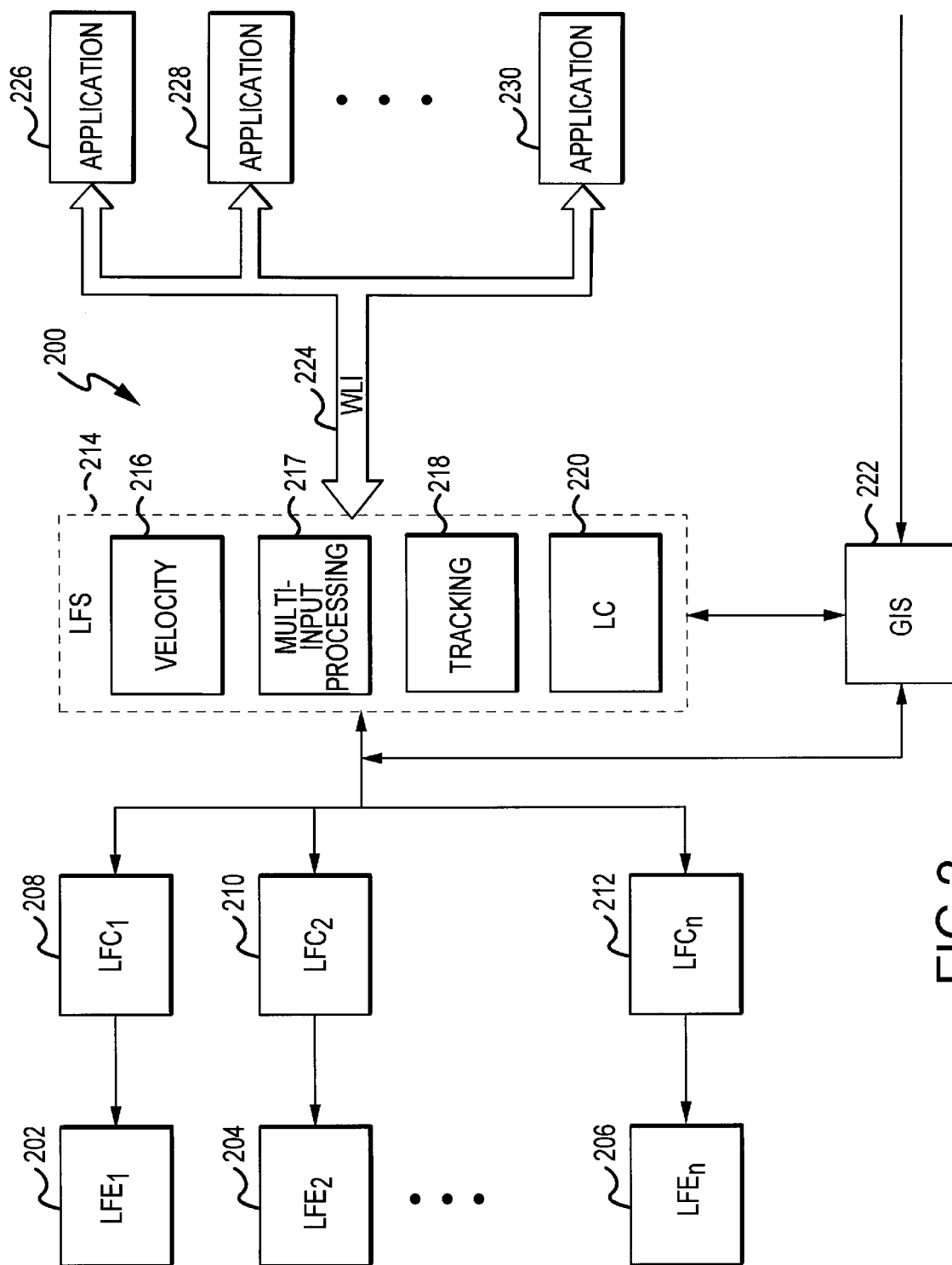


FIG. 2

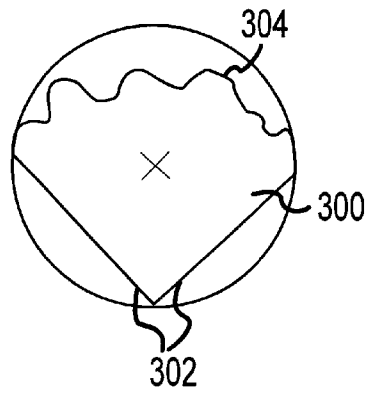


FIG. 3A

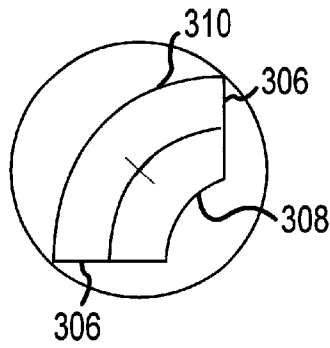


FIG. 3B

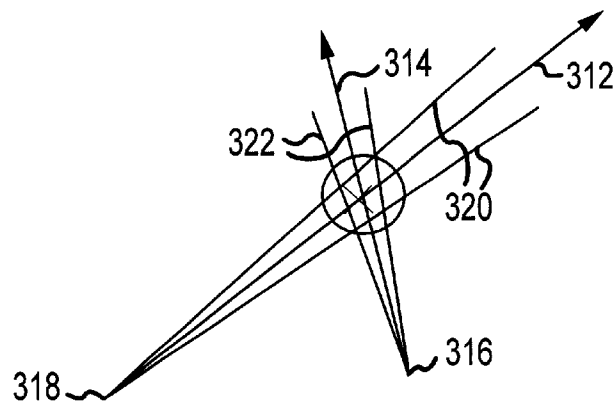


FIG. 3C

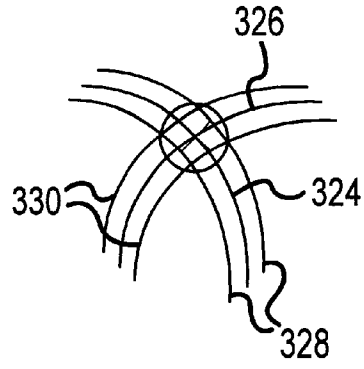


FIG. 3D

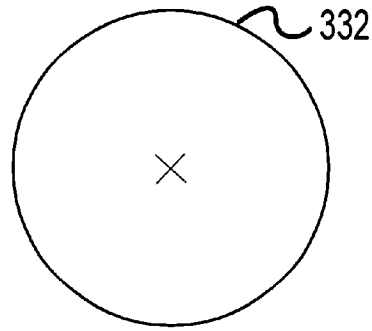


FIG. 3E

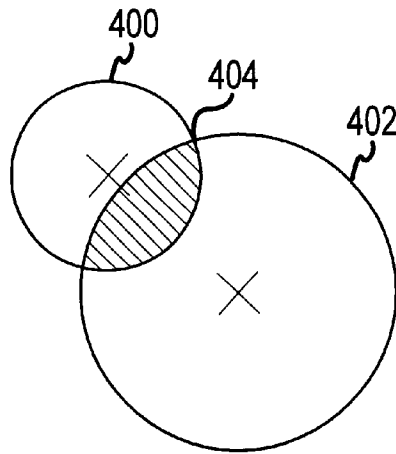


FIG. 4

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