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Rabinowitz et al.

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(54) **POSITION LOCATION USING
TERRESTRIAL DIGITAL VIDEO
BROADCAST TELEVISION SIGNALS**

(75) Inventors: **Matthew Rabinowitz**, Palo Alto, CA
(US); **James J Spilker, Jr.**, Woodside,
CA (US)

(73) Assignee: **Rosum Corporation**, Mountain View,
CA (US)

(*) Notice: Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 1280 days.

This patent is subject to a terminal dis-
claimer.

(21) Appl. No.: **09/932,010**

(22) Filed: **Aug. 17, 2001**

(65) **Prior Publication Data**

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Related U.S. Application Data

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filed on Jun. 21, 2001, now abandoned.

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2, 2001, provisional application No. 60/281,270, filed
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60/293,812, filed on May 25, 2001, provisional appli-
cation No. 60/293,813, filed on May 25, 2001, pro-
visional application No. 60/293,646, filed on May 25,
2001.

(51) **Int. Cl.**
G01S 3/02 (2006.01)

(52) **U.S. Cl.** **342/464**

(58) **Field of Classification Search** 342/357.01,
342/357.06, 453, 463, 464

See application file for complete search history.

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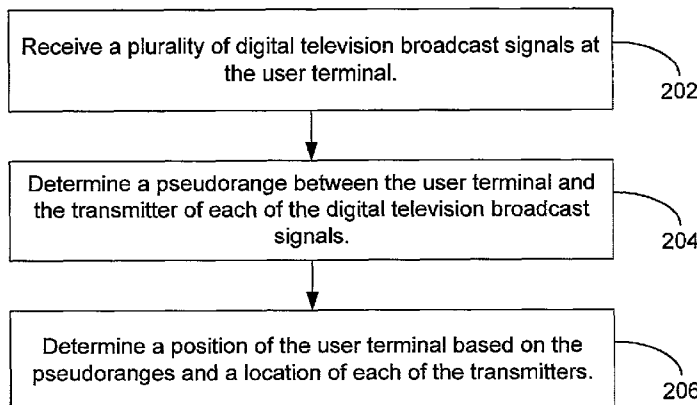
Primary Examiner—Dao L. Phan

(74) *Attorney, Agent, or Firm*—Richard A. Dunning, Jr.

(57) **ABSTRACT**

A method and computer program product for determining
the position of a user terminal includes receiving at the user
terminal a plurality of digital television (DTV) broadcast
signals from a plurality of DTV transmitters, wherein each
of the DTV signals is a European Telecommunications
Standards Institute (ETSI) Digital Video Broadcasting-Ter-
restrial (DVB-T) signal; determining a pseudo-range
between the user terminal and each DTV transmitter based
on the DTV broadcast signals based on a known component
in the DTV signals; and determining a position of the user
terminal based on the pseudo-ranges and a location of each
of the DTV transmitters.

87 Claims, 17 Drawing Sheets



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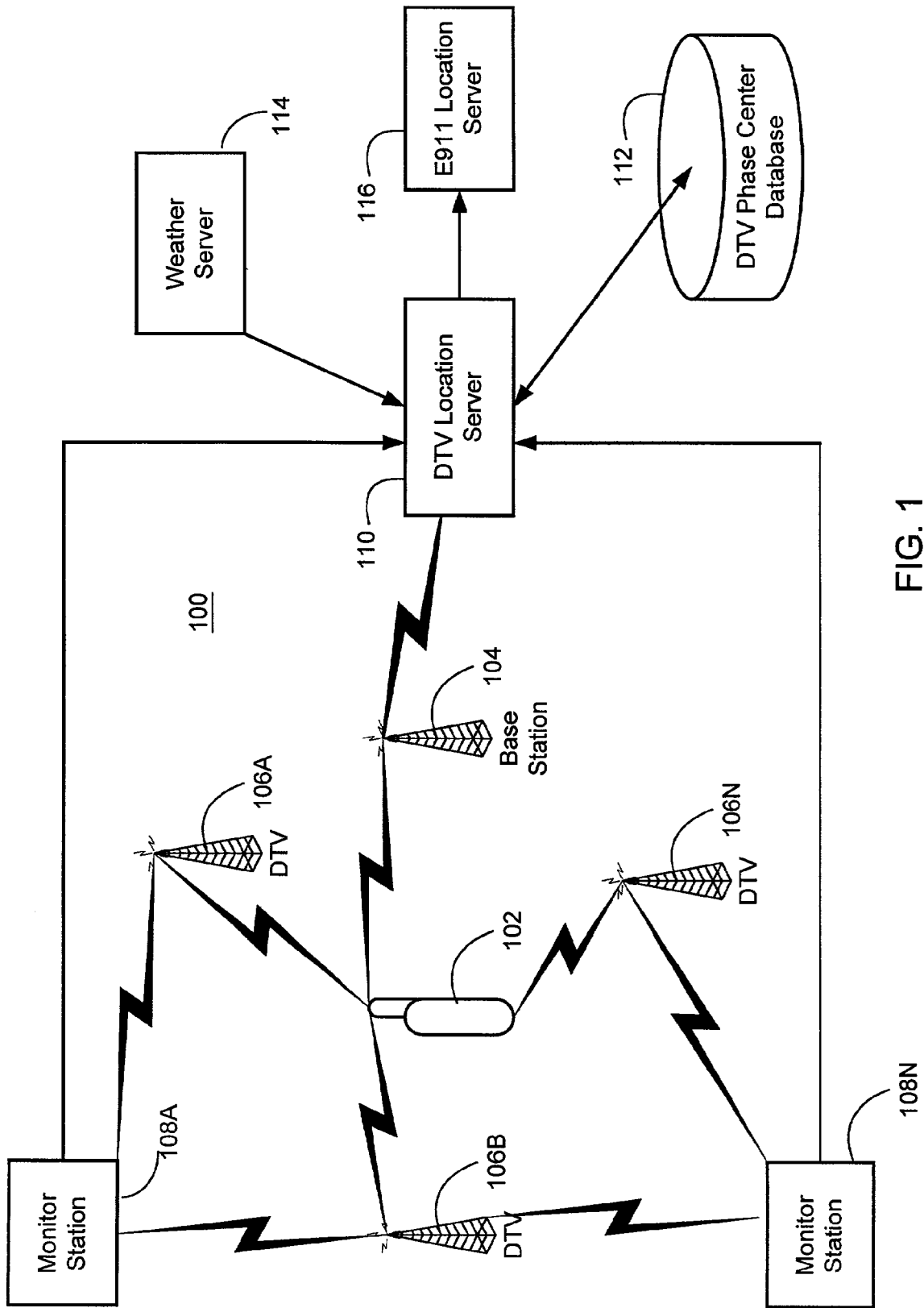


FIG. 1

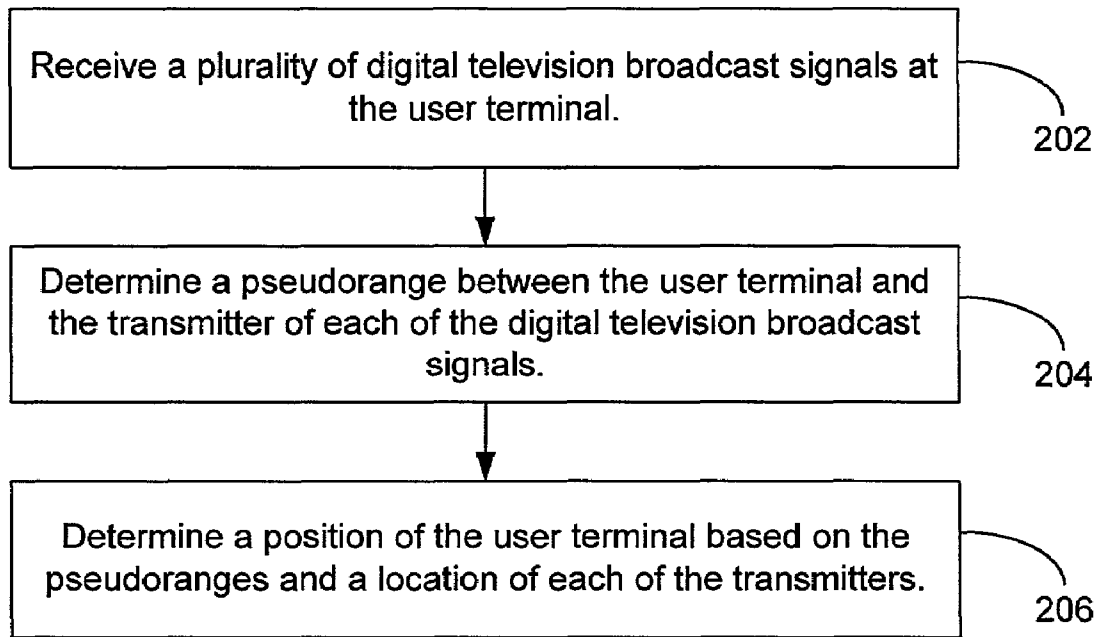


FIG. 2

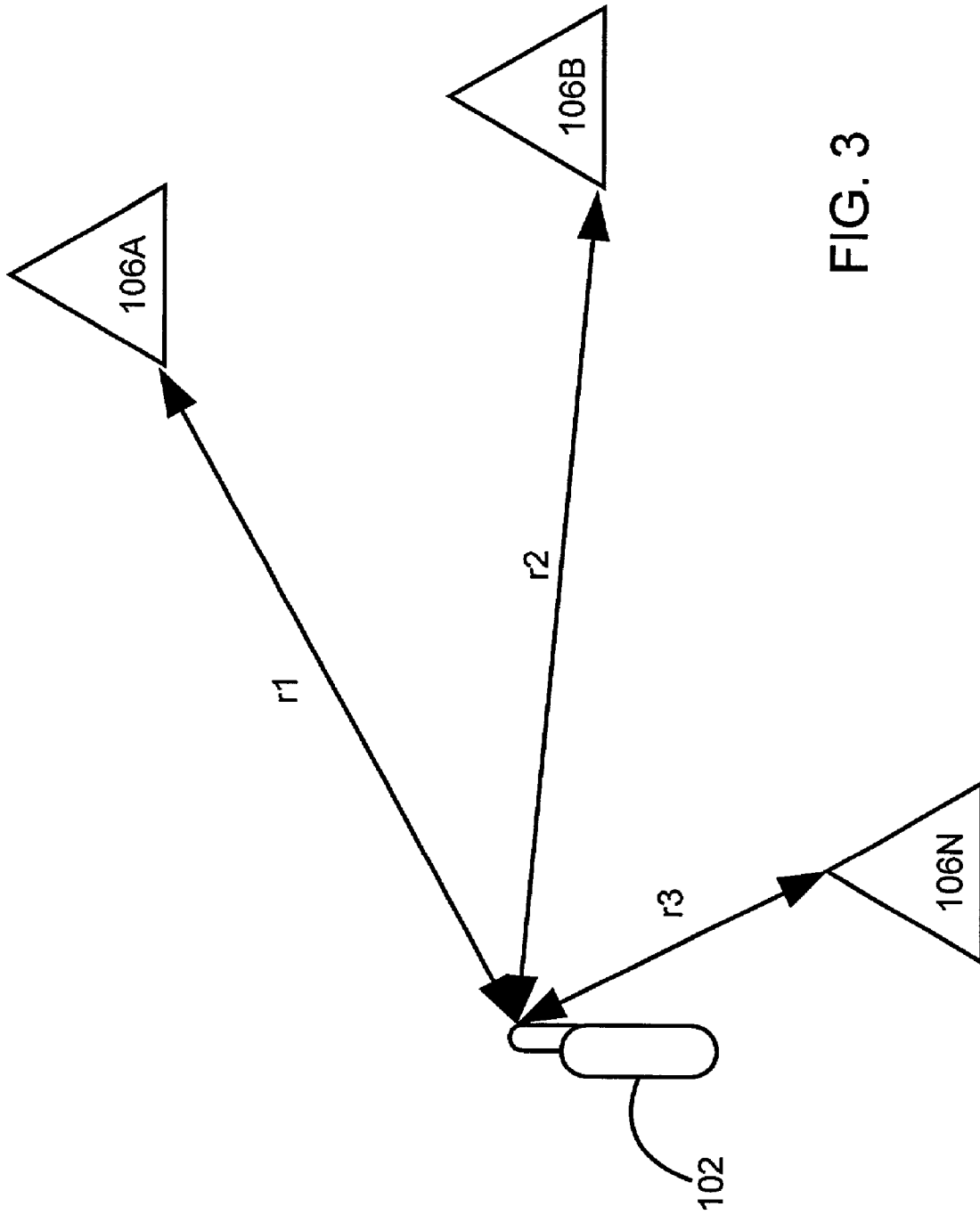


FIG. 3

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