



Patent Owner's Oral Argument Presentation

Google LLC et al v. Nariste Networks Pty. Ltd., No. IPR2023-01374
re U.S. Patent No. RE48,206

1

January 14, 2025

Before Benjamin D.M. Wood, Lynne H. Browne, and Richard H.
Marschall, *Administrative Patent Judges*

Table of Contents

1. “Position error” is expressed in units of distance	3
2. Watters Does Not Disclose “ a position error ”	5
3. Watters Does Not Disclose “ a current radio position ”	7
4. Nohara Does Not Disclose “ a position error ”	10

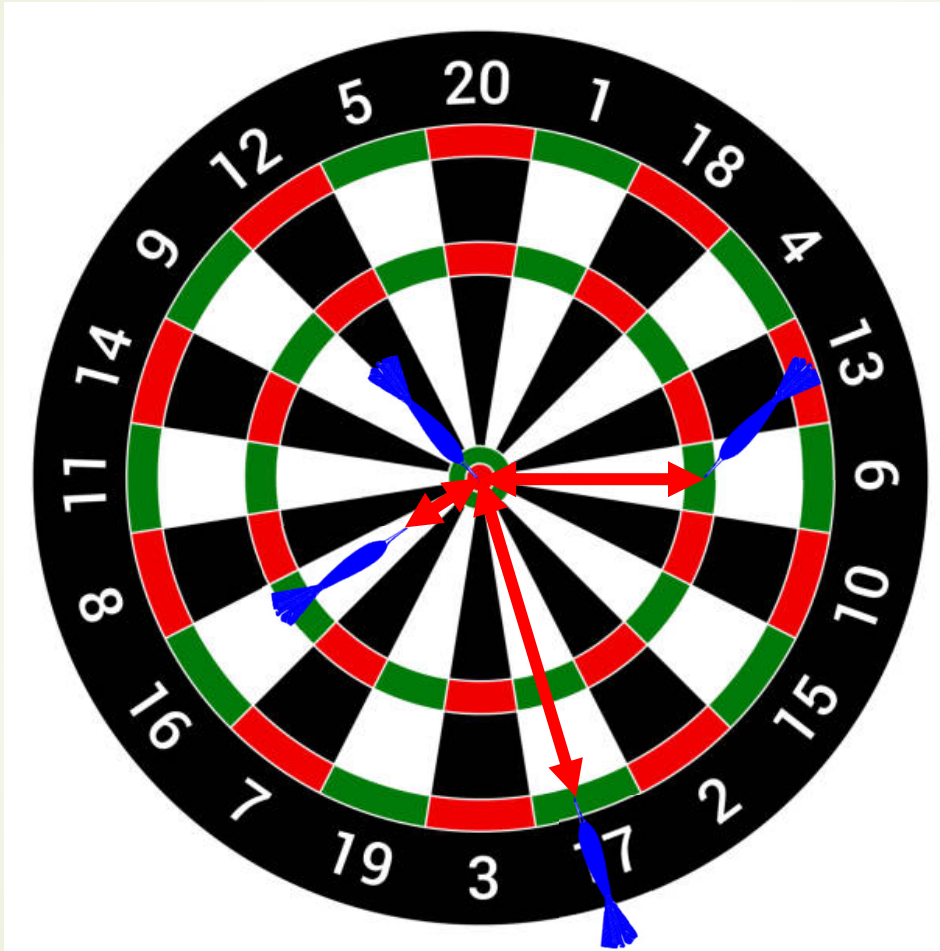
Claim 37:

... determining when said embedded GPS module should be powered on, said embedded GPS module then being powered on,

said when said embedded **GPS module should be powered on being dependent on at least one of a current radio position and a position error of said mobile device determined from the wireless communications network**, said wireless communications network being different from said GPS.

3

Position Error is expressed in units of distance



Position Error is expressed in units of distance

- '206 Patent and its Parent use this common understanding

The difference between this predicted position and the actual position measured at time t can be used to formulate the position error.

Ex. 1001, 6:43-46

If the reported error was less than 100 meters, the GPS power would not be turned on.

Ex. 2002, 303-04

Petitioners argue that Watters teaches that determining when to power GPS on is dependent on position error

That is, step 1230 determines whether its “embedded GPS module should be powered on being dependent on at least one of *a current radio position* and *a position error* of said mobile device,” as explained below.

Pet. at 29

- Watters does not disclose that powering on GPS is dependent on a position error

Watters only discloses determining when to power on GPS as depending on three factors

6

The alternative approach is shown in FIG. 12. At block 1200, a first fix is calculated. Then, at block 1210, the GPS receiver is turned off, and at block 1220, position is calculated using the cellular network infrastructure. At block 1230, a determination is made whether the requisite number of signals in the cellular network infrastructure are available for calculating position (e.g., three signals in the TDOA approach). If so, then block 1220 is repeated. If not, then at block 1240, the GPS receiver is turned on and the position is calculated using GPS. Thereafter, the process is repeated starting at block 1210. Alternative inquiries at block 1230 include determining how long (in time) it has been since the last GPS update and/or how far (in space) the mobile terminal has moved since the last GPS update. If a predetermined amount of time has passed, such as two minutes, or the mobile terminal has moved a predetermined distance, such as 100 meters, then a GPS update would be called for and the process proceeds to block 1240. Of course, the rate at which GPS updates are needed will depend on the conditions under which the mobile is operating, with less frequent updates needed if the mobile terminal is in an area

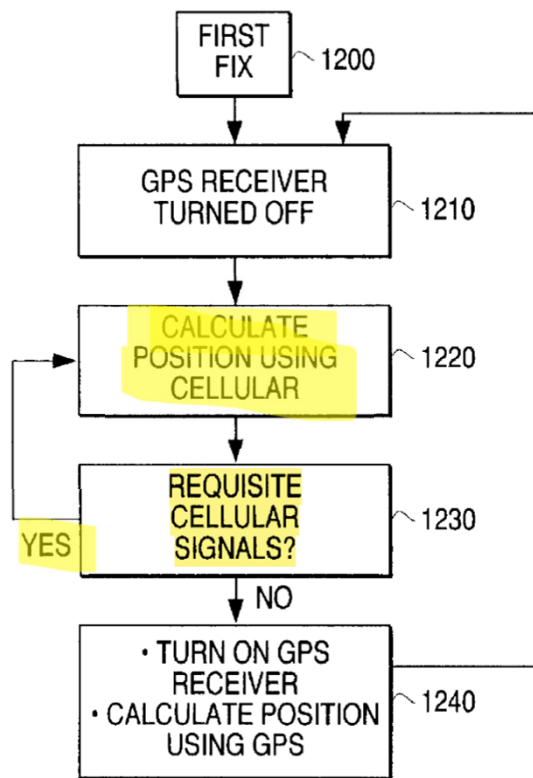
Ex. 1005, 22:47-67

Watters does not turn on GPS based on position error.

7

- If enough cellular signals exist, Watters **does not** turn on its GPS receiver.

FIG. 12



At block 1230, a determination is made whether the requisite number of signals in the cellular network infrastructure are available for calculating position (e.g., three signals in the TDOA approach). If so, then block 1220 is repeated. If not, then at block 1240, the GPS receiver is turned on and the position is calculated using GPS.

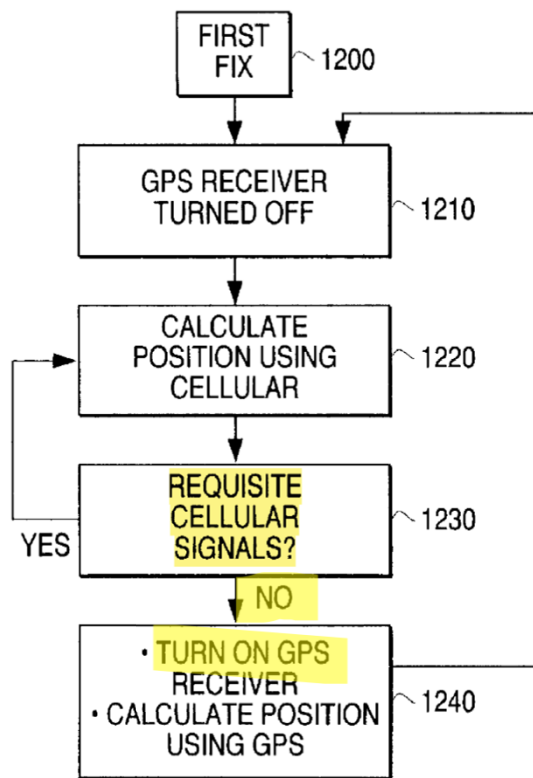
Ex. 1005, 22:50-54

Watters does not turn on GPS based on position error.

8

- Watters' GPS receiver turns on when there are not enough cellular signals.

FIG. 12



At block 1230, a determination is made whether the requisite number of signals in the cellular network infrastructure are available for calculating position (e.g., three signals in the TDOA approach). If so, then block 1220 is repeated. If not, then at block 1240, the GPS receiver is turned on and the position is calculated using GPS.

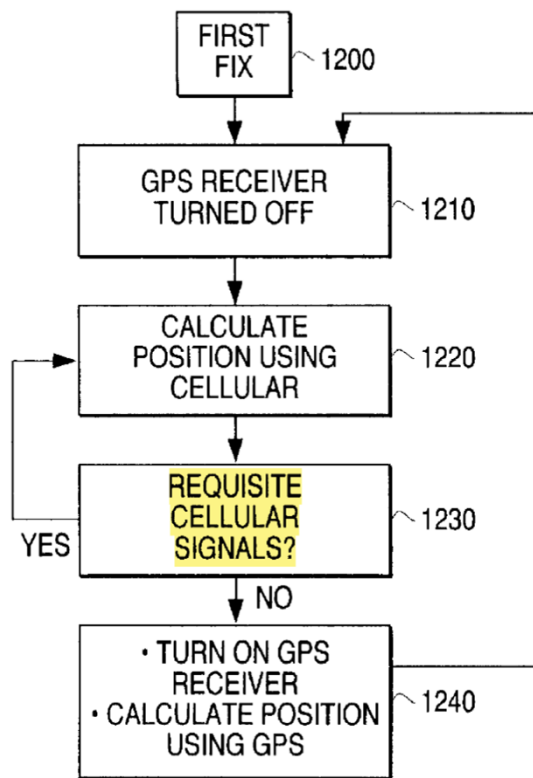
Ex. 1005, 22:50-54

Watters does not turn on GPS based on position error.

9

- Number of cellular signals is not a position error.

FIG. 12



At block 1230, a determination is made whether the requisite number of signals in the cellular network infrastructure are available for calculating position (e.g., three signals in the TDOA approach). If so, then block 1220 is repeated. If not, then at block 1240, the GPS receiver is turned on and the position is calculated using GPS.

Ex. 1005, 22:50-54

Watters does not turn on GPS based on position error.

10

5:54-6:12, 23:41-44.¹¹ Because there is some unreliability in cellular-based techniques based on the quality of the signal (e.g., multi-path signal propagation), Watters explains that the “rate at which GPS updates are needed [in block 1240] will depend on the conditions under which the mobile is operating.” *Id.*, 22:64-66.

Pet. at 31

- Watters discloses increasing GPS update frequency in an attempt to mitigate potential error.
- The claims require that position error **is determined** from the wireless communications network
 - Watters does not disclose determining position error

Petitioners' argument that distance traveled is a current radio position is incorrect

11

First, Watters teaches dependency on “current radio position” because it discloses determining “how far (in space) the mobile terminal has moved since the last GPS update.” Ex-1005, 22:59-60.

Pet. at 29

Alternative inquiries at block **1230** include determining how long (in time) it has been since the last GPS update and/or **how far (in space) the mobile terminal has moved since the last GPS update.** If a predetermined amount of time has passed, such as two minutes, or the mobile terminal has moved a predetermined distance, such as 100 meters, then a GPS update would be called for and the process proceeds to block **1240.**

Ex. 1005, 22:57-64

Watters' disclosure of using a distance traveled to determine when to turn GPS on does not teach using a "current radio position . . . determined from the wireless communications network"

- The difference between two position measurements does not provide how far a mobile terminal has moved
- Traveling in a circle results in a large amount of movement, with no change in position
 - Likewise, knowing how far something has moved does not mean knowing where it is
- Accordingly, Watters does not contemplate using "current radio position" to "determine[e] when said embedded GPS module should be powered on"

Where
are
you?



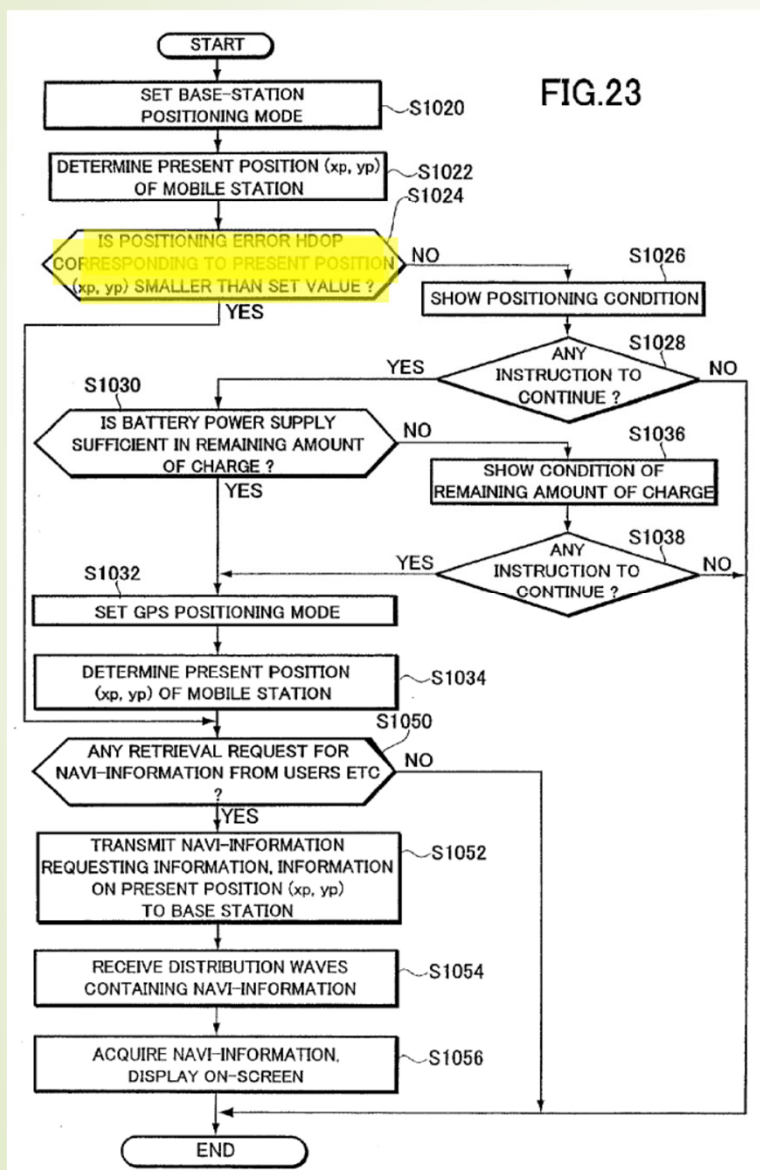
I've
traveled
a mile



Watters' disclosure of using a distance traveled to determine when to turn GPS on does not teach using a "current radio position . . . determined from the wireless communications network"

- The way to accurately get distance traveled is to use methods such as:
 - Doppler shift
 - On-board accelerometer
- End point minus start point does not give distance traveled

Petitioners argue Nohara's "HDOP" is a position error



Ex. 1006, Fig. 23

Nohara teaches determining when said embedded GPS module should be powered on and said embedded GPS module then being powered on. Specifically, Nohara teaches powering on GPS when a calculated Horizontal Dilution of Precision (HDOP) value (also called a "positioning error"), Ex-1006 ¶¶144, 147, for "base-station positioning mode" is too high (i.e., is not "smaller than set value"). *Id.*, Fig 23 (Steps 1024). Nohara's use of "positioning error HDOP" is

Pet. at 42

Nohara's definition of HDOP shows that it is not normally regarded as position error

[0144] Then, as shown in the following equation (11), a root-sum-square value HDOP (Horizontal Dilution of Precision) of the terms σ_{xx}^2 and σ_{yy}^2 is determined. The value HDOP shall be regarded as the positioning error quantified on the plane in the horizon system of coordinates.

$$HDOP = \sqrt{\sigma_{xx}^2 + \sigma_{yy}^2} \quad (11)$$

Ex. 1006, ¶144

- ➡ Nohara's treatment HDOP as a position error does not change the reality of what it is

Nohara's "HDOP" is not a position error

- HDOP is a function of the transmitter geometry of a wireless system
- It provides a statistical distribution of potential errors, but alone cannot provide a position error

Ex. 2001, 18-23

Nohara's “HDOP” is not a position error

- Experimental investigations show that position error can vary significantly for a given HDOP

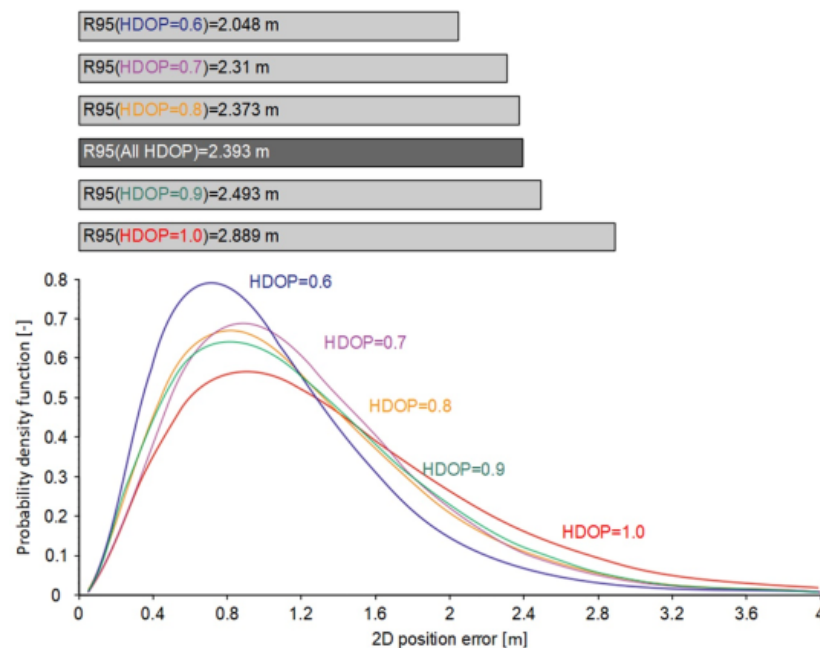


Fig. 5. GPS position error PDFs, determined separately for HDOP values (in the range of 0.6–1.0), together with R95 measures, calculated separately for measurements with a constant HDOP value.

Ex. 2003, Fig. 5

Nohara's "HDOP" is not a position error

- Nohara defines HDOP in a manner familiar to one in the art
- The covariance matrix of "A" of Nohara appears unitless in Nohara's derivation

$$A \cdot \delta X = \delta R \quad (7)$$

$$\delta X = A^{-1} \cdot \delta R \quad (8)$$

Ex. 1006, ¶¶141-142, equations (7 & 8)

- Nohara's equations show that "A" is dimensionless because δX and δR both have units of length.

Nohara's "HDOP" is not a position error

- However, Nohara also assumes that the dimensionless $(A^T \cdot A)^{-1}$ matrix is approximately equivalent to $\text{COV}(\delta X)$ (having units of distance):

$$\text{COV}(\delta X) = A^{-1} \cdot \text{COV}(\delta R) \cdot (A^{-1})^T \quad (9)$$

$$\cong (A^T \cdot A)^{-1}$$

$$(A^T \cdot A)^{-1} = \begin{bmatrix} \sigma_{xx}^2 & \sigma_{xy}^2 & \sigma_{xs}^2 \\ \sigma_{yx}^2 & \sigma_{yy}^2 & \sigma_{ys}^2 \\ \sigma_{sx}^2 & \sigma_{sy}^2 & \sigma_{ss}^2 \end{bmatrix} \quad (10)$$

Ex. 1006, ¶141-142, equations (9 & 10)

Nohara's "HDOP" is not a position error

- Nohara's HDOP is derived from the horizontal entries of $(A^T \cdot A)^{-1}$

$$HDOP = \sqrt{\sigma_{xx}^2 + \sigma_{yy}^2} \quad (11)$$

Ex. 1006, ¶144, equation (11)

- Regardless of whether Nohara's HDOP is expressed as a unitless number or having units because of Nohara's assumption, ultimately HDOP only predicts a statistical distribution of potential error based on a system's transmitter geometry

Nohara's "HDOP" is not a position error

- Nohara looks at the configuration of base stations to turn on GPS when it thinks there may be a high degree of error
- The '206 Patent turns on GPS based on the position error measured from the wireless radio network
- In other words, Nohara uses HDOP to predict a distribution of potential errors, while the '206 Patent measures the error

Neither reference cited by Petitioners discloses “determining when said embedded GPS module should be powered on . . . being dependent on at least one of a current radio position and a position error . . .”

- Watters’ determination of when to turn its GPS module on is dependent on the number of cellular signals present or, alternatively, the time interval or distance traveled since the last update.
 - Number of cellular signals is not a position error
 - Distance traveled is not a current radio position
- Nohara’s determination of when to turn its GPS module on is dependent on only HDOP, which is not a position error
 - Nohara does not disclose, and Petitioners do not argue Nohara discloses, using a current radio position