

ATTACHMENT A



Google v. Traffic Information

Presentation by **Google**



Introduction



Phillips v. AWH Corp. (Fed. Cir. 2005)

- “[T]he line between construing terms and importing limitations can be discerned with reasonable certainty and predictability if the court's focus remains on understanding how a person of ordinary skill in the art would understand the claim terms.”

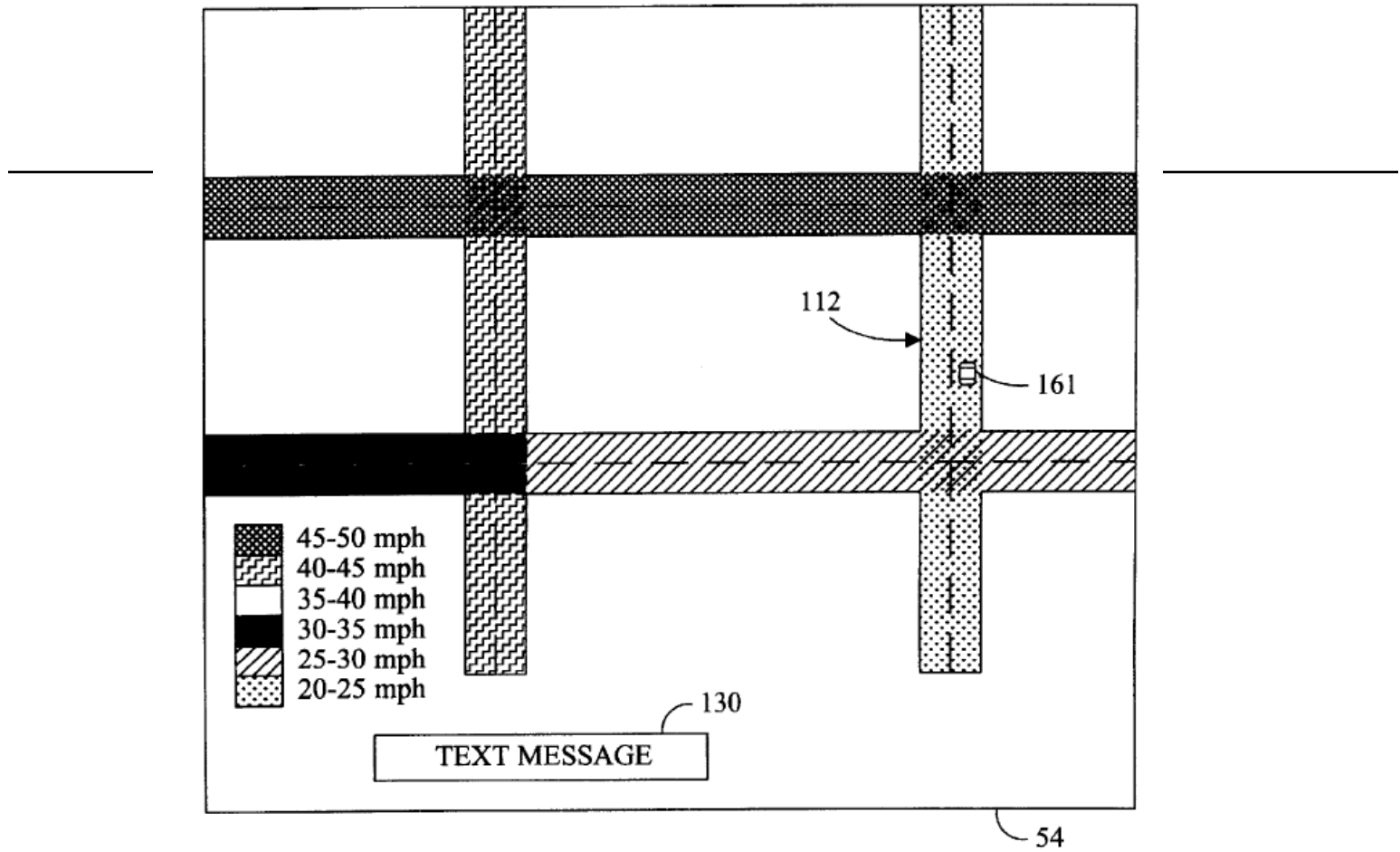


FIG. 6



IPXL Holdings, L.L.C. v. Amazon.com, Inc. (Fed. Cir. 2005)

- “A claim is considered indefinite if it does not reasonably apprise those skilled in the art of its scope.”

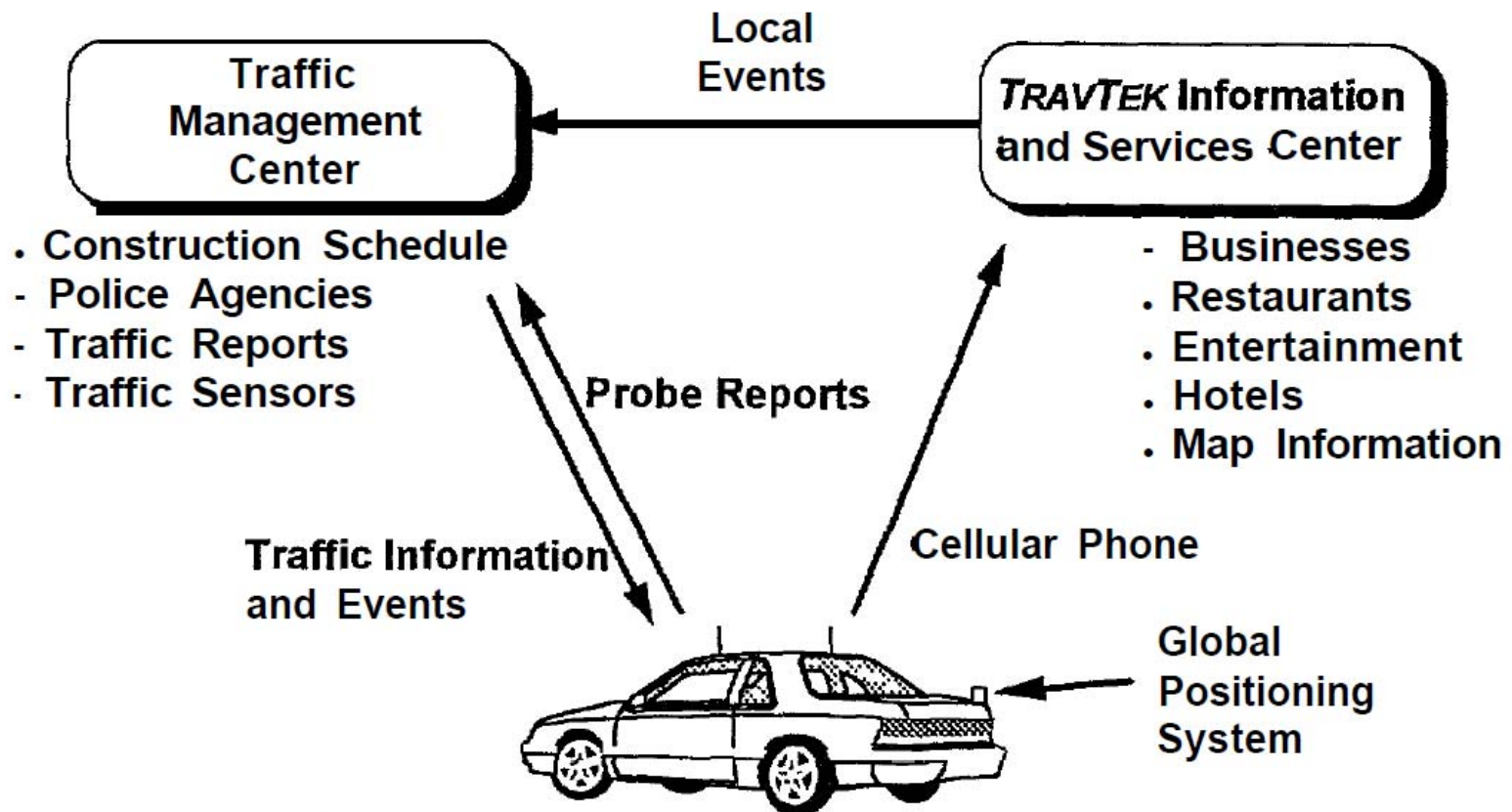


Figure 1. An overview of the TravTek system.

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CENTRAL REEXAMINATION UNIT THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No.: 6,466,862
Issued: October 15, 2002 Reexamination Control No.: 90/010,645
Inventor: Bruce W. DeKock et al. Reexamination Filing Date: September 25, 2009
Serial No.: 09/550,476 Art Unit: 3992
Filed: April 14, 2003
For: SYSTEM P

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Central Reexamination Unit
Commissioner for Patents
United States Patent & Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

The applicant requests that the following claims be canceled:

1 (canceled).

2 (canceled).

3 (canceled).

4 (canceled).

5 (canceled).

Date: 8/16/2010

By: [Signature]

Kevin L. Russell
Registration No. 38,292
Chernoff, Vilhauer et al.
Attorney for Patent Owner




Indefiniteness



Indefiniteness

Case law



IPXL Holdings, L.L.C. v. Amazon.com, Inc. (Fed. Cir. 2005)

- “A claim is considered indefinite if it does not reasonably apprise those skilled in the art of its scope.”



Halliburton v. M-I (CAFC 2008)

- “Even if a claim term’s definition can be reduced to words, the claim is still indefinite if a person of ordinary skill in the art cannot translate the definition into meaningfully precise claim scope” (at 1251)



United Carbon v. Binney & Smith (CAFC 2005)

- “The statutory requirement of particularity and distinctness in claims is met only when *[the claims]* clearly distinguish what is claimed from what went before in the art and clearly circumscribe what is foreclosed from future enterprise.” [at 236]



Markman v. Westview (CAFC 1996)

- “The limits of a patent must be known for the protection of the patentee, the encouragement of the inventive genius of others and the assurance that the subject of the patent will be dedicated ultimately to the public. . . . (*cont.*)



Markman v. Westview (CAFC 1996)

- “Otherwise, a zone of uncertainty which enterprise and experimentation may enter only at the risk of infringement claims would discourage invention only a little less than unequivocal foreclosure of the field.” [at 390]



Found indefinite:

- “at least about 160,000” – *Amgen*
- “aesthetically pleasing” - *Datamize*
- claimed compound could not be identified by testing - *Morton*
- “means for dispensing” (no corresponding structure found) – *Default Proof*



ICU Medical v. Alaris, 558 F.3d 1368 (CAFC 2009)

- “It is entirely proper to consider the function of an invention in seeking to determine the meaning of particular claim language.”
- Indefinite because species did not support generic claim.



Oakley v. Sunglass Hut (CAFC 2003)

- “vivid colored appearance”
- decided on preliminary injunction
- “one skilled in the art would interpret the phrase...in light of the specification to require that the maximum differential effect equal or exceed about 5.45%”



Modine v. ITC (CAFC 1996)

- “relatively small”
- no construction was approved by the CAFC because not required
- definite because of precise dimensions set out in specification



Haemonentics v. Baxter (CAFC 2010)

- “radius” “height” (could be measured in several places)
- Specification led court to identify inconsistent measurement methods with separate claims



Haemonentics v. Baxter (CAFC 2010)

- “Where, as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated.” (at 781)



Haemonentics v. Baxter (CAFC 2010)

- “Haemonentics argues...*[that the construction]* would yield an absurdity. Maybe so, but we do not redraft claims to contradict their plain language in order to avoid a nonsensical result.” (at 782)



Indefiniteness

“said user” – no longer at issue



Indefiniteness

“traffic information”

FIG. 1 is a schematic diagram of a traffic information system. The traffic information system, various information characteristics of traffic data at a plurality of locations. At least one of the traffic user stations provides a request to the computer system for information together with the request, geographic location of the traffic user station. In response to the request, the computer system provides to the traffic user station information representative of selected portions of the road database and selected portions of the traffic information database based on the respective geographic location of the requesting traffic user station. The traffic user station then displays graphically on the display information representative of selected portions of the road database and selected portions of the traffic information database.

The traffic information database may be derived from information obtained from stationary traffic monitors, mobile user stations, or a combination thereof. The traffic user station allows traffic information to be displayed in a variety of manners. The display can also show graphically the location of the car on the display. The user may select among different modes for displaying traffic information on the display.

The various aspects of the present invention have one or more of the following advantages. The present invention allows a user to obtain traffic information at any time, without waiting for a report to be broadcast. The present invention also allows detailed information relating to traffic conditions based on measurements of the traffic and the average vehicle speed in traffic density, to be supplied for a plurality of locations along a road. The invention also allows the convenient display of information in a readily understood form to the user, such as a graphical display.

The foregoing and other features and advantages of the invention will be more readily understood upon consideration of the following detailed description of the invention, taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

FIG. 1 shows a schematic of an exemplary embodiment of a system for providing traffic information.

FIG. 2 shows a front elevational view of an exemplary traffic monitor.

FIG. 3 shows an exemplary display for a user station.

FIG. 4 shows a schematic view of an exemplary embodiment of a road.

FIG. 5 is a partial electrical schematic for a traffic monitor of FIG. 2.

FIG. 6 is a schematic computer display.

FIG. 7 shows a schematic view of another exemplary embodiment of a system for providing traffic information.

FIG. 8 shows a schematic view of another exemplary embodiment of a system for providing traffic information.

FIG. 9 is a flow chart for a method of processing vehicle data to yield traffic information.

FIG. 10 is a flow chart for an alternative method of processing vehicle data to yield traffic information.

FIG. 11 is a schematic representation of a road system having traffic sensors and vehicles at different locations along the road.

FIG. 12 is a combined map and traffic information database representation of the road system depicted in FIG. 11.

FIG. 13 is an exemplary embodiment of a sensor.

FIG. 14 is an exemplary embodiment of an object display.

FIG. 15 is an exemplary embodiment of a look-ahead display.

FIG. 16 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 17 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 18 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 19 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 20 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 21 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 22 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 23 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 24 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 25 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 26 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 27 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 28 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 29 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 30 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 31 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 32 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 33 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 34 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 35 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 36 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 37 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 38 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 39 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 40 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 41 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 42 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 43 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 44 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 45 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 46 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 47 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 48 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 49 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 50 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 51 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 52 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 53 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 54 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

FIG. 55 is a schematic diagram of a mobile user station having alternative mechanisms for signaling commands to the user station.

Referring now to the figures, wherein like numerals refer to like elements, FIG. 1 shows a schematic diagram of the system 10 for providing traffic information to a plurality of user stations 52 connected to a network 50. A plurality of traffic monitors 20 are arranged at spaced apart locations along a road 12. The traffic monitors 20 measure traffic information by detecting the speed (velocity) or frequency of vehicles traveling along the road (freeway or highway) 12. For example, in one embodiment, the traffic monitors 20 may detect the speed of individual vehicles 14 traveling along the road 12. Alternatively, the traffic monitors 20 may measure the frequency with which the individual vehicles 14 pass specified points along the road 12.



Indefiniteness

“less than all available traffic information”

REMARKS

States of claims and support for claim changes

Claims 1-23 are pending.

Support for claim 21, as amended, is found in U.S. Patent No. 6,785,606 on col. 21, line 46 to col. 22, line 4.

Support for claim 22, as amended, is found in U.S. Patent No. 6,785,606 on col. 21, line 46 to col. 22, line 4.

Amendment

The Examiner indicated that claims 1-20 are confirmed.

The Examiner rejected claims 21, 22, and 23 as being anticipated by TravTek (Eilmsensitt et al., TravTek System Architecture Evaluation, July 1995).

The applicant respectfully disagrees with the Examiner's characterization of TravTek.

The TravTek central computer provides current link travel times to the TravTek vehicle for processing by a route selection and a route guidance function. See TravTek, page 37, Fig. 29. The purpose of the route selection function is to identify the shortest route, in terms of travel time, for the user (see TravTek, page 29, fourth paragraph). In TravTek, the computer provides "all" the link travel times to the vehicles each minute (see TravTek, page 42). All the link travel times for any potential route are needed by the route selection function in the TravTek vehicle in order for that function to determine the shortest route.

Claim 22 patentably distinguishes over TravTek by claiming that the less than all available traffic information is "displayed...[on] said display." Subparagraphs (f) and (g) of claim 22 need to be construed in such a manner that they are consistent with one another. On the one hand, subparagraph (f) claims "traffic information," as transmitted by the computer system, being displayed graphically. On the other hand, subparagraph (g) claims "less than all available traffic information" being displayed graphically. Subparagraph (f) and subparagraph (g) are consistent with each other when one recognizes that the phrase "traffic information" in subparagraph (f) refers in a broad manner to what is more specifically delineated in subparagraph (g). That is, the "traffic information" recited in (f), in properly

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route are needed by the route selection function in the TravTek vehicle in order for that function to determine the shortest route.

Claim 22 patentably distinguishes over TravTek by claiming that the less than all available traffic information is "displayed...[on] said display." Subparagraphs (f) and (g) of claim 22 need to be construed in such a manner that they are consistent with one another. On the one hand, subparagraph (f) claims "traffic information," as transmitted by the computer system, being displayed graphically.



Indefiniteness

“representative of”



CollegeNet v. XAP (D.Or. 2004)

- “It is also improper to eliminate, ignore, or ‘read out’ a claim limitation from a claim in order to extend a patent to subject matter disclosed, but not claimed.”

3 computer, not by human intelligence intervention. The computer includes a real time processing capability of most algorithms that can be implemented with a minimum speed advantage to provide to the user from a traffic source monitoring the traffic. In addition, the user interface has a real time user interface that can be used to change the real time user interface to show more images of a road network and road network. Alternatively, the system might be implemented as a computer program that can be used to monitor the road network.

4 In U.S. Pat. No. 5,712,727, a system is described for providing traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user.

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8 the data provided therein, but not the real time traffic information. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user.

9 While all of the above systems provide some degree of traffic information to a commuter, nevertheless the above systems do not provide an efficient method of collecting and presenting objective traffic information to a commuter. What is desired, therefore, is a system for providing traffic information which allows a commuter to obtain information at any time desired by the commuter, that provides information relating to a plurality of points along a road, that provides information relating to different traffic levels, that provides information that is particularly relevant to the commuter, and that provides the information in an easily understood format that may be easily utilized by a commuter while driving.

10 BRIEF SUMMARY OF THE INVENTION The present invention concerns the limitation of the prior art by providing a system for providing traffic information to a plurality of users connected to a network. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user.

11 In a preferred embodiment, the system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user. The system includes a computer system that can be used to monitor the road network and provide traffic information to a user.

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While all of the above systems provide some degree of traffic information for a commuter, nevertheless the above systems do not provide an efficient method of collecting and presenting objective traffic information to a commuter. What is desired, therefore, is a system for providing traffic information which allows a commuter to obtain information at any time desired by the commuter, that provides information relating to a plurality of points along a road, that provides information relating to different traffic levels, that provides information that is particularly relevant to the commuter, and that provides the information in an easily understood format that may be easily utilized by a commuter while driving.

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 system 40 may easily incorporate the traffic information received from the user station 32 with the map database located in the user station 32 with the map database. Thus, by utilizing a map database that contains latitude and longitude information for various locations, the system may easily overlay traffic information on any of the displayed map data by associating the geographic data (latitude and longitude) corresponding to the traffic information with the geographic data corresponding to the map.

FIGS. 11 to 12 illustrate such a system. FIG. 11 shows schematically a section of a road having various locations 200-210. Along the road are positioned various numbers 200-210 where geographic locations have been determined. Traveling along the road are a variety of users 400-410 having respective user stations and GPS receivers. FIG. 12 illustrates an embodiment of a map and traffic information database that may be developed to provide traffic information over the network to individual users. Each of the various locations and links in addition, the database may optionally contain the measured road, as well as generally the direction the traffic flows at the location (for example, using a 300 degree compass, 0 degrees would represent straight north while 90 degrees would represent straight east). The database also includes traffic information, such as the average vehicle velocity calculated for that location. Thus, for example, referring to FIG. 11, the traffic monitor 200 may be used to provide the vehicle velocity for location 202. User 400 may be used to provide the vehicle velocity at location 208.

Of course, while a database has been illustrated that contains both map and traffic information, the system could use two or more databases containing portions of the information, such as a separate map database and a separate traffic information database. As an example of a map database useful with such a system is that supplied from NAVTEQ. The map database could reside on either or both the computer system 40 or the mobile user station 42.

When a user requests traffic information from the computer system 40, the computer system 40 transmits the requested data based on either the geographic location of the user, or for the geographic location requested by the user.

The computer system 40 either sends the raw traffic data requested by the user or sends a signal representative of the map and/or traffic database which may be used by the user station 52 to represent the map and traffic information on the display 54.

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 information both by location and time. The spacing of the locations for which traffic information is transmitted may differ every half mile, mile, etc. The spacing depends on the location of general level traffic conditions and the number of cars waiting during a particular time. If, for example, there are no vehicles present spaced every half mile, then the traffic information database may report traffic information for each of these locations. However, for a section of road that does not have traffic, the spacing of the locations reporting traffic information depends on the frequency of vehicles passing along the highway and what are reported traffic conditions. For example, when the traffic density is high, there will be a large number of vehicles from which to gather data, and accordingly the spacing between locations may be small, such as 1 mile. However, when the traffic density is low, there may be few vehicles from which to gather data, and the spacing may be large, such as 3 miles. The traffic information database may be configured so that the spacing is proportional to the ability to collect data for a distance area. Thus, for a section of highway in a congested area, the spacing of locations for traffic information may be short, such as 1/2 mile, while in sparsely used the spacing may be large, such as every three miles.

Storing the amount of time over which data is collected and averaged may be varied. Ideally, the traffic information generated represents traffic conditions at the moment in time. However, it may be necessary to collect data for a length of time in order to gather enough data to either report any traffic information at all, or to ensure that the traffic information is truly representative of conditions at that location. When traffic density is high, the length of time over which data is collected and used to determine traffic conditions may be short, for example three minutes. In contrast, when traffic density is high, data may be collected for a long period of time, such as three hours. When used to determine traffic information, the data may be averaged over the period for which data has been collected. Alternatively, the traffic information could be weighted, so that older traffic information, though used, is given less weight when determining traffic information for a particular location.

In varying the spacing between locations for which data is generated in the database and the length of time over which information is collected, the database may be configured to optimize the collection and presentation of traffic information. For areas with high traffic density, the data may be gathered over a short period of time, and the spacing between locations may be small. For areas with low traffic density, the data may be gathered over long periods of time and the spacing may be large. The database may be configured as traffic conditions change, so that during periods of congestion the data is gathered at a particularly close interval for a particular area, while during periods of freely flowing traffic, the information is gathered over a longer time for the same area.

The present invention provides several alternative methods

When a user requests traffic information from the computer system 40, the computer system 40 transmits the requested data based on either the geographic location of the user, or for the geographic location requested by the user. The computer system 40 either sends the raw traffic data requested by the user, or sends a signal representative of the map and/or traffic database, which may be used by the user station 52 to represent the map and traffic information on the display 54.



Specific Term Construction



Specific Term Construction

“traffic information”



“traffic information”

- “the current speed, frequency, or flow of multiple vehicles traveling along a road as detected by one or more traffic monitors”
- “data regarding traffic conditions, which data can include, but is not limited to, the speed, velocity, motion, density, flow, or frequency of vehicles on a road, and/or other data representative of the movement of vehicles on a road”

maintains a map database and a traffic information database. The traffic information database contains information representative of traffic data at a plurality of locations. At least one of the traffic user stations provides a request to the computer system for information together with the respective geographic location of the mobile user station. In response to the request, the computer system provides to the mobile user station information representative of selected portions of the map database and selected portions of the traffic information database based on the respective geographic location of the requesting mobile user station. The mobile user station then displays graphically on the display information representative of selected portions of the map database and selected portions of the traffic information database.

The traffic information database may be derived from information obtained from stationary traffic monitors, mobile user stations, or a combination thereof. The mobile user station allows traffic information to be displayed in a variety of manners. The display can also show graphically the location of the car on the display. The user may select among different modes for displaying traffic information on the display.

The various aspects of the present invention have one or more of the following advantages. The present invention allows a consumer to obtain traffic information at any time, without waiting for a report to be broadcast. The present invention also allows detailed information relating to traffic conditions based on measurements of the traffic, such as the average vehicle speed or traffic density, to be supplied for a plurality of locations along a road. The invention also allows the convenient display of information in a readily understood form to the user, such as a graphical display.

The foregoing and other features and advantages of the invention will be more readily understood upon consideration of the following detailed description of the invention, taken in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS.

FIG. 1 shows a schematic of an exemplary embodiment of a system 10.
 FIG. 2 is a traffic monitor.
 FIG. 3 is a mobile user station.
 FIG. 4 is a network.
 FIG. 5 is a map of a road.
 FIG. 6 is a schematic of FIG. 2.
 FIG. 7 is a schematic of FIG. 2.
 FIG. 8 is a schematic of FIG. 2.
 FIG. 9 is a schematic of FIG. 2.
 FIG. 10 is a schematic of FIG. 2.
 FIG. 11 is a schematic of FIG. 2.
 FIG. 12 is a schematic of FIG. 2.
 FIG. 13 is a schematic of FIG. 2.
 FIG. 14 is a schematic of FIG. 2.
 FIG. 15 is a schematic of FIG. 2.
 FIG. 16 is a schematic of FIG. 2.

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FIG. 14 is an exemplary embodiment of an other display.
 FIG. 15 is an exemplary embodiment of a look ahead display.
 FIG. 16 is a schematic diagram of a mobile user station having alternative mechanisms for issuing commands to the user station.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS.

Referring now to the figures, wherein like numerals refer to like elements, FIG. 1 shows a schematic diagram of the system 10 for providing traffic information to a plurality of user stations 22 connected to a network 20. A plurality of traffic monitors 28 are arranged at spaced apart locations along a road 12. The traffic monitors 28 measure traffic conditions by measuring the speed (velocity) or frequency of vehicles traveling along the road 12. For example, in one embodiment, the traffic monitors 28 may detect the speed of individual vehicles 14 traveling along the road 12. Alternatively, the traffic monitors 28 may measure the frequency with which individual vehicles 14 pass specified points along the road 12.

FIG. 2 shows a front elevational view of an exemplary embodiment of a traffic monitor 28. The traffic monitor 28 has a detector 22 for measuring or otherwise sensing traffic. FIG. 2 shows two different embodiments 22A and 22B of a detector 22. The detector 22A may be any type of measuring device which is capable of measuring or otherwise sensing traffic and generating a signal representative of or capable of being used to determine the traffic conditions. For example, the detector 22A could measure the average speed of the vehicles 14 or could measure the individual speed (velocity) of each vehicle 14. The detector 22B may detect vehicle frequency, that is, the frequency at which vehicles pass a certain point, or may measure traffic flow, consisting of the number of vehicles passing a certain point for a unit of time (e.g., vehicles per second). The detector 22 may use any suitable technique to measure traffic conditions (data). For example, in one embodiment, the detector 22A could employ radar waves, light waves (optical or infrared), ultrasonic, sound

detector 22. The detector 22 may be any type of measuring device which is capable of measuring or otherwise sensing traffic and generating a signal representative of or capable of being used to determine the traffic conditions. For example, the detector 22 could measure the average speed of the vehicles (cars or trucks) 14 at locations along the road 12, or it could measure the individual speed (velocities) of each vehicle 14. The detector 22 may detect vehicle frequency, that is, the frequency at which vehicles pass a certain point, or may measure traffic flow, consisting of the number of vehicles passing a certain point for a unit of time (e.g., vehicles per second). The detector 22 may use any suitable technique to measure traffic conditions (data). For example, in one embodiment, the detector 22A could employ radar waves, light waves (optical or infrared), ultrasonic, sound



Specific Term Construction

Device Terms



Device Terms

- Traffic monitor
- Mobile user station



Specific Term Construction

“traffic monitor”



“traffic monitor”

- A stationary device capable of determining the current speed, frequency, or flow of multiple vehicles traveling along a road
- Any device used to sense, measure, detect, and/or determine vehicular movement and transmit and/or provide a signal representative of vehicular movement



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- Traffic monitors and mobile user stations are distinct devices

computer, working between an intelligent television. The user interface includes a road map showing a plurality of road segments in a user's vicinity, where "vicinity" is defined as a road segment in a user's vicinity which is within a predetermined distance of the user's current location. The user interface also includes a road map showing the distance to the user's current location from a road segment in a user's vicinity which is within a predetermined distance of the user's current location.

Further, the user interface includes a road map showing a plurality of road segments in a user's vicinity, where "vicinity" is defined as a road segment in a user's vicinity which is within a predetermined distance of the user's current location. The user interface also includes a road map showing the distance to the user's current location from a road segment in a user's vicinity which is within a predetermined distance of the user's current location. In addition, the user interface includes a road map showing a plurality of road segments in a user's vicinity, where "vicinity" is defined as a road segment in a user's vicinity which is within a predetermined distance of the user's current location. The user interface also includes a road map showing the distance to the user's current location from a road segment in a user's vicinity which is within a predetermined distance of the user's current location.

Further, the user interface includes a road map showing a plurality of road segments in a user's vicinity, where "vicinity" is defined as a road segment in a user's vicinity which is within a predetermined distance of the user's current location. The user interface also includes a road map showing the distance to the user's current location from a road segment in a user's vicinity which is within a predetermined distance of the user's current location.

Further, the user interface includes a road map showing a plurality of road segments in a user's vicinity, where "vicinity" is defined as a road segment in a user's vicinity which is within a predetermined distance of the user's current location. The user interface also includes a road map showing the distance to the user's current location from a road segment in a user's vicinity which is within a predetermined distance of the user's current location.

the data providing device held on the road can use the received traffic data from the vehicles to predict the occurrence of traffic congestion based on the user time and speed of a vehicle. It is assumed that at a certain point, vehicles were traveling normally at a certain time and the speed of each vehicle has decreased drastically at the user time. In this case, it is predicted that traffic congestion will occur at the vicinity of that point. Therefore, a user's current location is displayed by, for example, communicating to each vehicle data on the location of the user's current location and the user's current location. Therefore, a vehicle operator can gain knowledge of the traveling state of a vehicle which has already passed over that point and adjust travel controlling traffic flow.

While all of the above systems provide some degree of traffic information for a customer, nevertheless the above systems do not provide an efficient method of collecting and processing objective traffic information to a customer. When desired, therefore, a system for providing traffic information which allows a customer to obtain information on a road segment by the customer, and provide information relating to a plurality of points along a road, that provides information relating to different traffic levels, that provides information that is particularly relevant to the customer, and that provides the information in an easily understood format that may be easily utilized by a customer while driving.

BRIEF SUMMARY OF THE INVENTION

The present invention encompasses the limitations of the prior art by providing a system for providing traffic information to a plurality of users connected to a network. In a first aspect the present invention provides a system comprising a plurality of traffic monitors, each comprising at least a traffic device and a transmitter, the traffic device generating a signal in response to vehicle traffic and the transmitter transmitting the signal. The system also includes a receiver that receives the signals from the traffic monitors. A computer system is connected to the receiver and is also connected to the network. The computer system is responsive to a request signal received from one of the users, transmits to the user the information representative of the signal transmitted by the traffic monitors.

In a second aspect, aspects of the invention, a system provides traffic information to a plurality of users connected to a network. Traffic is detected at each of a plurality of locations along a road and signal generated at each of the locations representative of the traffic at each of the locations. Each of the signals is transmitted to a receiver. The receiver is connected to a transmitter that transmits the data from the receiver to the user.

In a third aspect, aspects of the invention, a system provides traffic information to a plurality of users connected to a network. Traffic is detected at each of a plurality of locations along a road and signal generated at each of the locations representative of the traffic at each of the locations. Each of the signals is transmitted to a receiver. The receiver is connected to a transmitter that transmits the data from the receiver to the user.

The traffic information database may be derived from information obtained from stationary traffic monitors, mobile user stations, or a combination thereof. The mobile user station allows traffic information to be displayed in a variety of manners. The display can also show graphically the location of the car on the display. The user may select among different modes for displaying traffic information on the display.



Phillips v. AWH Corp. (Fed. Cir. 2005)

- “[t]he main problem with elevating the dictionary to such prominence is that it focuses the inquiry on the abstract meaning of words rather than on the meaning of claim terms within the context of the patent.”
Phillips, 415 F.3d at 1321.



SciMed Life Sys. v. Advanced Cardiovascular Sys., (CAFC 2001)

- Watts v. XL Sys. (CAFC 2000)
 - Specification described only one method to achieve pipe joint sealing connection
- Wang Labs v. America Online (CAFC 1999)
 - Only character-based protocol described and enabled in patent, bit-mapped display systems excluded from scope of claims
- Cultor v. A.E. Staley Manufacturing (CAFC 2000)
 - Limited to polydextrose purification process using citric acid catalyst
- O.I. Corp. v. Tekmar (CAFC 1997)
 - Patent described only non-smooth or conical passage structures
- Toro v. White Consolidated Indus. (CAFC 1999)
 - Restriction ring interpreted as permanently attached where specification and drawings did not describe or illustrate any other structure

Therefore catheter included only coaxial lumens, not dual or side-by-side lumens



Inpro II v. T-Mobile (CAFC 2006)

- "Although claims need not be limited to the preferred embodiment, when the invention is more broadly described, neither do the claims enlarge what is patented beyond what the inventor described as the invention." *Inpro II*, 450 F.3d at 1354-55.



- Traffic monitors are stationary devices

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computer, working between an intelligent vehicle. The user interface includes a road map showing a plurality of road segments in a user environment where historical speed information is provided to the system from traffic sensors monitoring the traffic. In addition, the user interface has a road map that the driver can use to view traffic information and segments that are within range of a currently selected road segment. Furthermore, the system tracks the location of each vehicle and provides information to the user, such as "stationary" indicated congestion devices.

Smith, Jr. et al., U.S. Pat. No. 5,774,027, disclose a system to alleviate the need for sophisticated route guidance systems, where the computer has a positioning system as well as a map database in a car. A central facility receives and stores traffic information for providing route computation services from various sources: traffic information sources, such as local police authorities, toll-way authorities, operators, or sensors located on the road or on about traffic flow. To reduce the duration of a replacement route guidance system a portable device receives a speed message for preselected consumer areas from the central facility. In this manner, Smith, Jr. et al. teach that each user receives only the traffic information that is relevant to the user's preselected consumer areas. Of course, the present kind computer system may be provided in a set of fixed computers, where each of the computers is able to indicate available routes. In response, the user may select an alternative route known by him that is different from any preselected consumer areas Smith, Jr. et al. further suggest that a GPS enabled portable unit for transmitting a present position of the portable device to the central facility which at least a portion of the current road information. By matching multiple positions of the portable device with known positions on the preselected route and accounting for time between two consecutive recorded positions the central facility can obtain upon the status traffic information to be used in transmitting future speed factors to other users of preselected consumer areas. Unfortunately, the system taught by Smith, Jr. et al. requires the user to have a set of preselected consumer areas for each route to be tracked, which may be difficult if the user is unfamiliar with the area. In addition, Smith, Jr. et al. teach that the user should select alternative routes that are known to the user, premissibility of the consumer area of the preselected consumer areas may be lacking, which is difficult if the user is not already familiar with the area.

Patent et al., U.S. Pat. No. 5,675,009, disclose a system for dynamic monitoring of the road traffic, the system of road equipped with monitoring and information provision systems, as well as warning on display, and hence the possibility of regulating the traffic. The system does not require that the vehicles be equipped with appropriate sensors and transmitting apparatus.

Alford et al., U.S. Pat. No. 5,897,274, disclose a vehicle tracking guidance system that includes data providing devices and a road map and a vehicle. The vehicle includes a data transmitter for sending a data providing device, the data of the vehicle when the vehicle passes over the road. The data providing device sends a data message for receiving data sent from the data providing device. The receiving data may include vehicle pass time data, vehicle pass time, and speed. The data providing device has on the road include a receiver for receiving the traveling data from the vehicle and a transmitter for sending other passing vehicles the traveling data. A central system communicating through

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the data providing device has on the road can use the received traffic data from the vehicle to predict the occurrence of traffic congestion based on the pass time and speed of a vehicle. It is assumed that at a certain pass, vehicles were traveling normally at a certain time and the speed of each vehicle has decreased drastically at the next time. In this case, it is predicted that traffic congestion will occur at the vicinity of that pass. Therefore, a warning signal can be delivered to, for example, communicating to each vehicle data via a radio frequency transmitter to control traffic congestion. Therefore, a vehicle operator can gain knowledge of the traveling state of a vehicle which has already passed over that point and adjust travel controlling traffic flow.

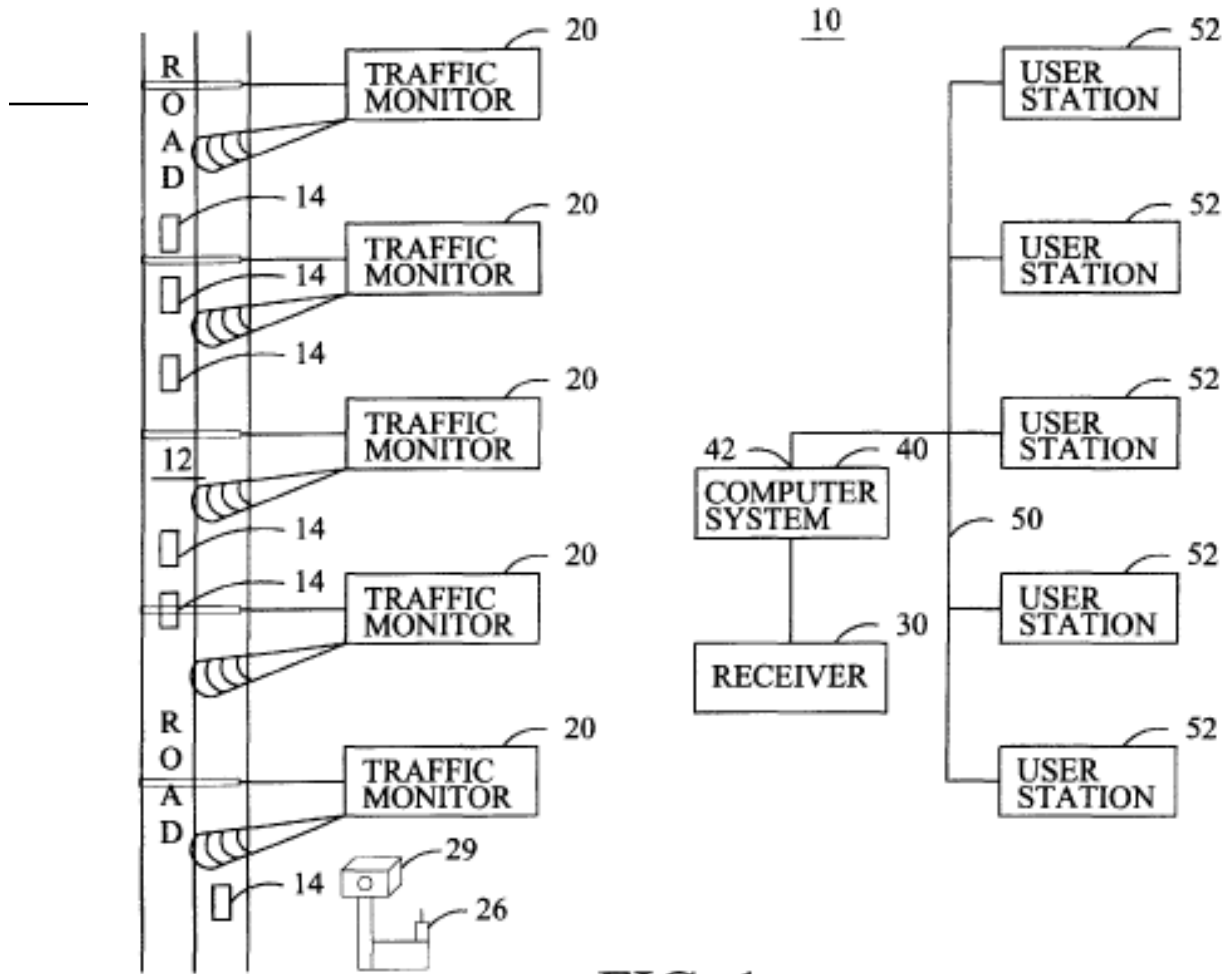
While all of the above systems provide some degree of traffic information for a customer, nevertheless the above systems do not provide an efficient method of collecting and providing objective traffic information to a customer. When desired, therefore, a system for providing traffic information which shows a customer to obtain information to help him determine the conditions, and provide information relating to a plurality of points along a road, that provides information relating to different traffic levels, that provides information that is particularly relevant to the customer, and that provides the information in an easily understood format that may be easily utilized by a customer while driving.

BRIEF SUMMARY OF THE INVENTION

The present invention encompasses the limitations of the prior art by providing a system for providing traffic information to a plurality of users connected to a network. In a first aspect the present invention provides a system comprising a plurality of traffic monitors, each comprising at least a traffic device and a transmitter, the traffic device generating a signal in response to vehicle traffic and the transmitter transmitting the signal. The system also includes a receiver that receives the signals from the traffic monitors. A computer system is connected to the receiver and is also connected to the network. The computer system, in response to a request signal received from one of the users, transmits to the user the information representative of the signals transmitted by the traffic monitors.

In a second aspect, aspects of the invention, a system provides traffic information to a plurality of users connected to a network. Traffic is detected at each of a plurality of locations along a road and signal generated at each of the locations representative of the traffic at each of the locations. Each of the signals is transmitted to a central facility of a computer system. The central facility then transmits the information to the users.

The traffic information database may be derived from information obtained from stationary traffic monitors, mobile user stations, or a combination thereof. The mobile user station allows traffic information to be displayed in a variety of manners. The display can also show graphically the location of the car on the display. The user may select among different modes for displaying traffic information on the display.



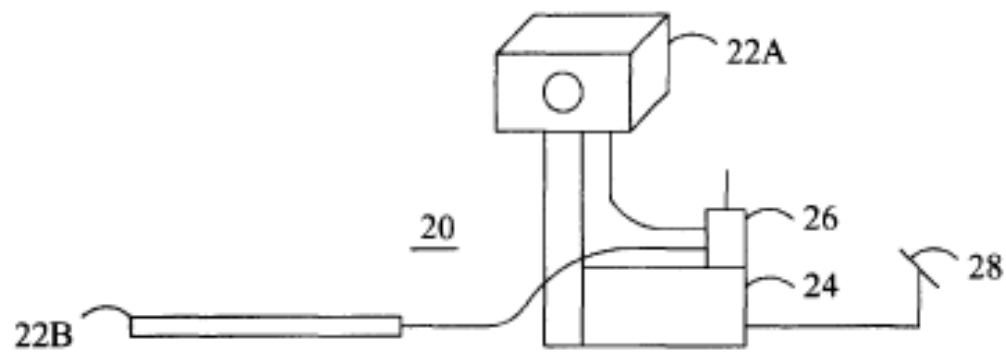


FIG. 2

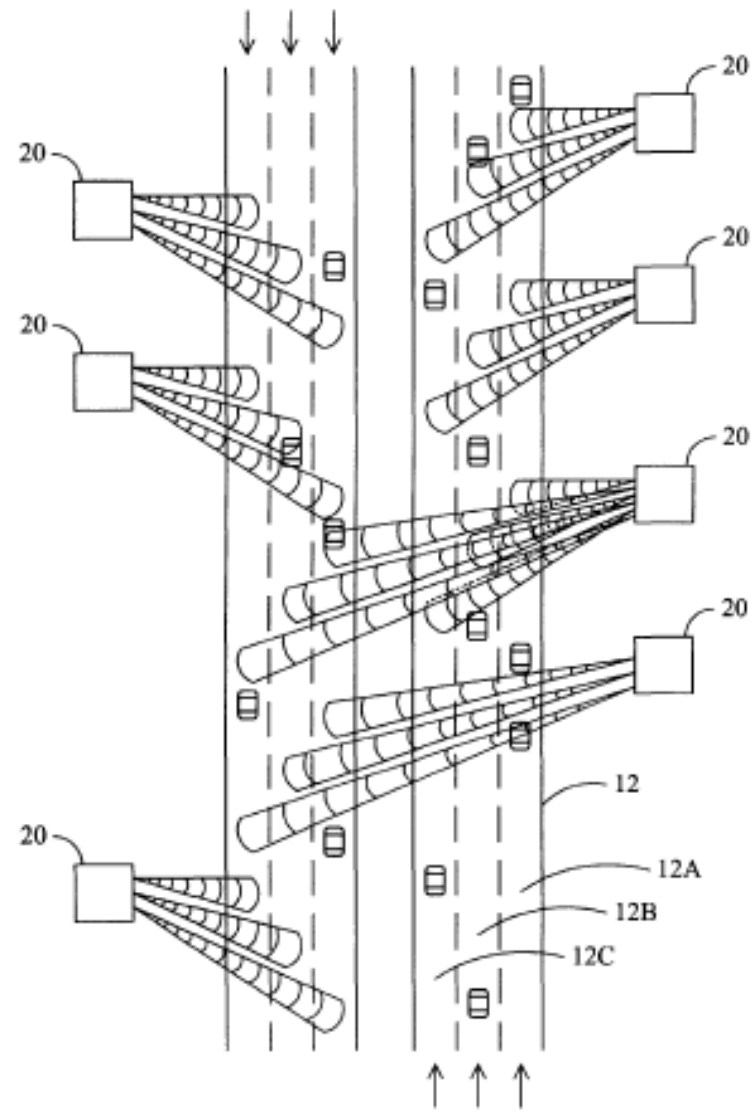


FIG. 7

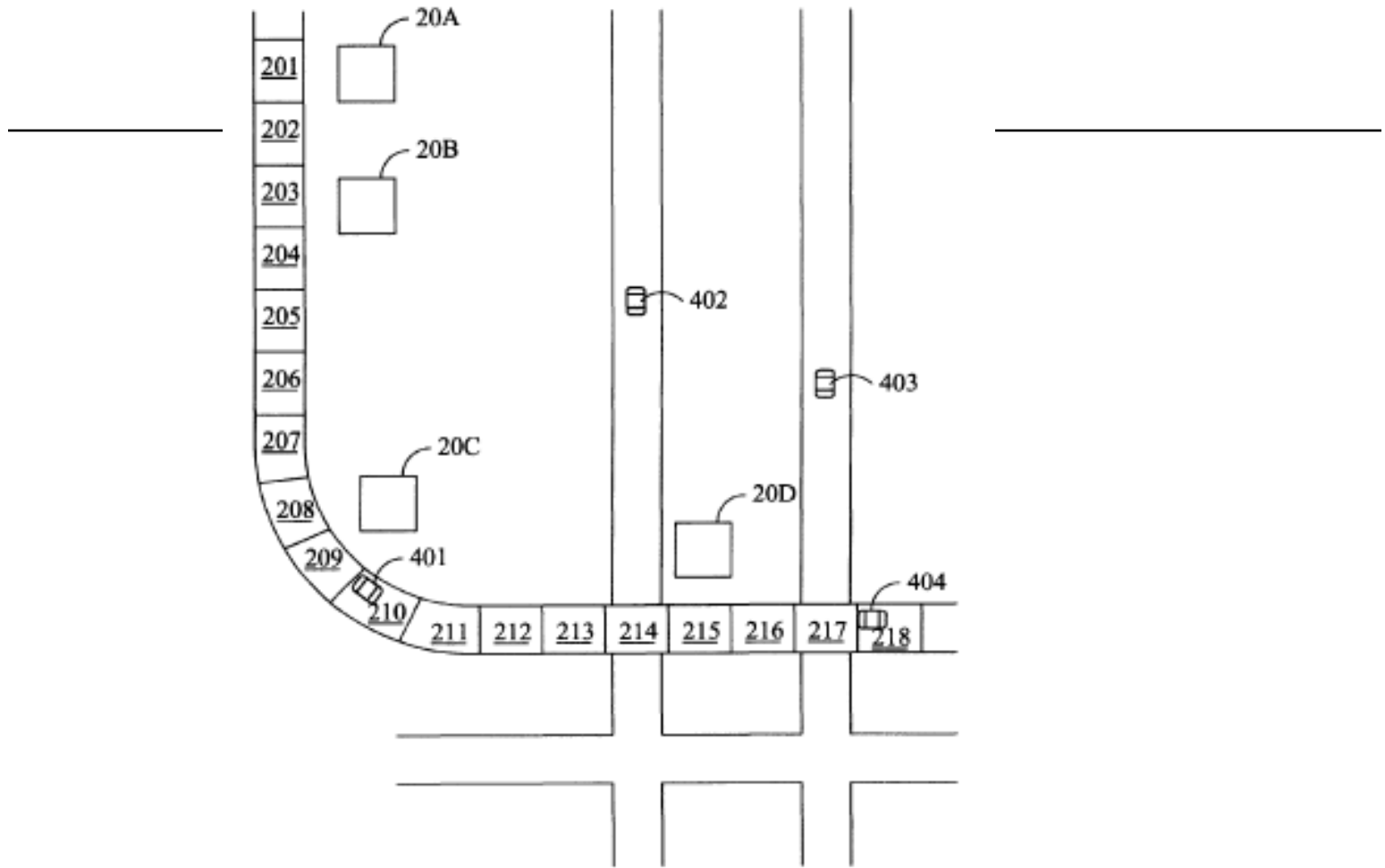


FIG. 11



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Thus, the combination of the mobile user station 52, GPS receiver and transmitting units 64 provides an especially advantageous method for collecting traffic information. Surprisingly, this system is capable of providing traffic information that is superior to that collected by stationary sensors. This is because traffic information may be potentially collected at more locations based on the number of mobile user stations 52, and because individual vehicle speed can be monitored rather than average vehicle speed. In addition, the system has a significant cost advantage in that it is not necessary to install traffic monitors 20, or at least the number of traffic monitors 20 that are necessary can be substantially reduced. The system also provides automatic traffic reporting, and thus does not rely on the manual input of data. Furthermore, the system is low maintenance, since there are no traffic monitors 20 to maintain. The system is also particularly robust, in that if a particular mobile user station 52 malfunctions, traffic information can still be collected for all locations based on data reported by other mobile users. In contrast, if a stationary sensor 20 fails, no data can be collected from that location. Thus, the collection of traffic data from a plurality of mobile user stations 52 to create a traffic information database provides surprising advantages and a superior system for providing traffic information.

Thus, the combination of the mobile user station 52, GPS receiver and transmitting units 64 provides an especially advantageous method for collecting traffic information. Surprisingly, this system is capable of providing traffic information that is superior to that collected by stationary sensors. This is because traffic information may be potentially collected at more locations based on the number of mobile user stations 52, and because individual vehicle speed can be monitored rather than average vehicle speed. In addition, the system has a significant cost advantage in that it is not necessary to install traffic monitors 20, or at least the number of traffic monitors 20 that are necessary can be substantially reduced. The system also provides automatic traffic reporting, and thus does not rely on the manual input of data. Furthermore, the system is low maintenance, since there are no traffic monitors 20 to maintain. The system is also particularly robust, in that if a particular mobile user station 52 malfunctions, traffic information can still be collected for all locations based on data reported by other mobile users. In contrast, if a stationary sensor 20 fails, no data can be collected from that location. Thus, the collection of traffic data from a plurality of mobile user stations 52 to create a traffic information database provides surprising advantages and a superior system for providing traffic information.



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- Traffic monitors must detect current information

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to the system 10 has many advantages. It allows a user to receive contemporaneous traffic information from a plurality of locations. It allows the user to obtain immediate information rather than waiting for the broadcast of information at specified times. Further, the amount of information provided by the system is far superior to that provided by any other traffic reporting system. A user can obtain immediate and contemporaneous traffic conditions, such as average vehicular speed, traffic flow, or vehicle frequency, for a plurality of locations along a road. Where traffic monitors



Specific Term Construction

“mobile user station”



“mobile user station”

- A mobile device, distinct from a traffic monitor, capable of determining and displaying traffic information
- An easily moving or movable device that can transmit data to and/or receive data from the network. The mobile user station may be a cellular phone or other handheld unit, or may be installed within a car



Specific Term Construction

Data terms



Data Terms

- Data representative of traffic/traffic information database
- Vehicular movement
- Less than all available traffic information/selected portions of said traffic information database
- Providing...in response



Specific Term Construction

“data representative of traffic/traffic information database”



“data representative of traffic/traffic information database”

- The current speed, frequency, or flow of multiple vehicles traveling along a road
- No construction needed, or “a collection of traffic information”

3. The system of claim 1 wherein said traffic information is displayed with a text message.

4. The system of claim 1 wherein said traffic detector detects vehicular speed.

5. The system of claim 1 wherein at least one of said transmitter transmits directly to said receiver.

6. The system of claim 1 wherein at least one of said transmitter transmits to another traffic receiver.

7. The system of claim 1 wherein at least one of said traffic receiver includes a video camera.

8. The system of claim 1 wherein said detector is a video camera.

9. The system of claim 1 wherein said user provides location and language information to said computer system.

10. The system of claim 1 wherein said computer system stores said traffic information to provide to said mobile user station based on a signal received from said global positioning system receiver.

11. The system of claim 10 wherein said computer system maintains a traffic information database containing data representative of traffic at a plurality of locations, and updates said traffic information database in response to signals received from said mobile user station.

12. The system of claim 10 wherein said mobile user station displays both the location of said mobile user station and traffic information graphically on said display.

13. The system of claim 12 wherein said mobile user station has an input mechanism to select a route in which traffic information is shown on said display.

14. A system for providing traffic information to a plurality of mobile user stations in a network, comprising:

(a) a plurality of vehicles, each said vehicle comprising at least a mobile user station, a global positioning system receiver and a transmitter, said mobile user station providing a signal including data representative of a location of said mobile user station and at least one of a speed of said vehicle and an acceleration rate of said mobile user station and said transmitter transmitting said signal;

(b) a computer system and signals transmitted by said user stations; and

(c) a computer system interconnected with said receiver and said network, said computer system, in response to a request for information from one of said mobile user stations, providing an response therein to said one of said mobile user stations information representative of said signals transmitted by said mobile user stations, said receiver and vehicle further comprising a display and said information transmitted by said computer system is displayed graphically on said display; and

(d) wherein said computer system has a map database, and said computer system, in response to said request for information, transmits information representative of a portion of said map database, and said information representative of said map database is displayed graphically.

15. The system of claim 14 wherein said computer system maintains a traffic information database containing information representative of traffic at a plurality of locations, and updates said traffic information database in response to signals received from said transmitter traffic receiver.

16. The system of claim 15 wherein said computer system stores data provided by said mobile user stations to show more before updating said traffic information database.

17. The system of claim 14 wherein the location of said one of said mobile user stations is displayed graphically on

and said display together with said traffic information provided by said computer system.

18. The system of claim 17 wherein said location of said vehicle is shown as a point on said display regardless of movement of said vehicle.

19. The system of claim 17 wherein said displayed location of said vehicle depends on said location of said vehicle, in that the displayed location changes as the vehicle moves through space.

20. The system of claim 14 wherein said mobile user station has an input mechanism to select different modes of displaying traffic information on said display.

21. A system for providing traffic information to a plurality of mobile user stations in a network, comprising:

(a) a plurality of mobile user stations, each mobile user station being interconnected with a display, a global positioning system receiver and a communicating device to allow each of said mobile user stations to send and receive signals;

(b) a computer system interconnected with another communicating device and a network, said computer system being capable of sending and receiving signals to and from said mobile user stations;

(c) said computer system including a map database and a traffic information database, said traffic information database containing data representative of traffic at a plurality of locations;

(d) at least one of said request to said computer system to send together with a request to said one of said mobile user stations, said mobile user station providing an response to said one of said mobile user stations information representative of said signals transmitted by said one of said mobile user stations;

(e) said one of said mobile user stations providing a signal including data representative of a location of said mobile user station and at least one of a speed of said vehicle and an acceleration rate of said mobile user station and said transmitter transmitting said signal;

(f) a computer system and signals transmitted by said user stations; and

(g) a computer system interconnected with said receiver and said network, said computer system, in response to a request for information from one of said mobile user stations, providing an response therein to said one of said mobile user stations information representative of said signals transmitted by said mobile user stations, said receiver and vehicle further comprising a display and said information transmitted by said computer system is displayed graphically on said display; and

(h) wherein said computer system has a map database, and said computer system, in response to said request for information, transmits information representative of a portion of said map database, and said information representative of said map database is displayed graphically.

18. The system of claim 14 wherein said computer system maintains a traffic information database containing information representative of traffic at a plurality of locations, and updates said traffic information database in response to signals received from said transmitter traffic receiver.

19. The system of claim 18 wherein said computer system stores data provided by said mobile user stations to show more before updating said traffic information database.

20. The system of claim 14 wherein the location of said one of said mobile user stations is displayed graphically on

- 21.** A system for providing traffic information to a plurality of mobile users connected to a network, comprising:
- a plurality of mobile user stations, each mobile user station being associated with a display, a global positioning system receiver and a communicating device to allow each of said mobile user stations to send and receive signals;
 - a computer system interconnected with another communicating device and a network, said computer system being capable of sending and receiving signals to and from said mobile user stations;
 - said computer system including a map database and a traffic information database, said traffic information database containing data representative of traffic at a plurality of locations;
 - at least one of said mobile user stations providing a



Specific Term Construction

“vehicular movement”



“vehicular movement”

- The current speed, frequency, or flow of multiple vehicles traveling along a road as detected by one or more traffic monitors.
- The velocity, speed, position, and/or change in position of a vehicle.



Specific Term Construction

“less than all available traffic information”/“selected portions of said traffic information database”



“less than all available traffic information”

- Cannot be defined from the specification
- The computer system may send traffic information corresponding to only some of the traffic monitors

23. The system of claim 1 wherein said computer system receives said traffic information database based on data being from a plurality of traffic monitors.

24. The system of claim 1 wherein said computer system automatically updates said traffic information database and derived data from said traffic information database.

25. The system of claim 1 wherein said at least one of said mobile user stations is a cellular phone.

26. The system of claim 1 wherein said mobile user station further comprises a memory capable of storing a map display.

27. The system of claim 1 wherein said mobile user station displays a selected portion of said map display.

28. The system of claim 1 wherein each said mobile user station provides longitude and latitude information to said computer system.

29. The system of claim 1 wherein said location of said one of said mobile user stations is displayed graphically.

30. The system of claim 1 wherein said computer system stores data provided by said mobile user stations to derive some whether said data corresponds to actual traffic conditions.

31. The system of claim 1 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said mobile user station location to said one of said database and updates said traffic information database.

32. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:

(a) a plurality of mobile user stations, each mobile user station being associated with a display and a computerizing device to allow each of said mobile user stations to send and receive signals;

(b) a computer system interconnected with each computerizing device and a network, said computer system being capable of sending and receiving signals to and from said mobile user stations;

(c) said computer system including a map database and a traffic information database, said traffic information database containing data representative of traffic at a plurality of locations;

(d) at least one of said mobile user stations providing a signal associated with a specific geographic location of said one of said mobile user stations, and by response thereto, said computer system updating said traffic information database based on said specific geographic location of said one of said mobile user stations; and

(e) said computer system comparing said signal associated with said specific geographic location of said one of said mobile user stations with said map database before updating said traffic information database.

33. The system of claim 11 wherein said at least one of said mobile user stations is a cellular phone.

34. The system of claim 11 wherein said computer system provides a memory capable of storing a map display.

35. The system of claim 11 wherein said mobile user station displays a selected portion of said map display.

36. The system of claim 11 wherein each said mobile user station provides longitude and latitude information to said computer system.

37. The system of claim 11 wherein said location of said one of said mobile user stations is displayed graphically.

38. The system of claim 11 wherein said computer system stores data provided by said mobile user stations to derive some whether said data corresponds to actual traffic conditions.

39. The system of claim 11 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said mobile user station location to said one of said database and updates said traffic information database.

40. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:

(a) a plurality of mobile user stations, each mobile user station being associated with a display and a computerizing device to allow each of said mobile user stations to send and receive signals;

(b) a computer system interconnected with each computerizing device and a network, said computer system being capable of sending and receiving signals to and from said mobile user stations;

(c) said computer system including a map database and a traffic information database, said traffic information database containing data representative of traffic at a plurality of locations;

(d) at least one of said mobile user stations providing a signal associated with a specific geographic location of said one of said mobile user stations, and by response thereto, said computer system updating said traffic information database based on said specific geographic location of said one of said mobile user stations; and

(e) said computer system comparing said signal associated with said specific geographic location of said one of said mobile user stations with said map database before updating said traffic information database.

24. The system of claim 11 wherein said mobile user station further comprises a memory capable of storing a map display.

25. The system of claim 11 wherein said mobile user station displays a selected portion of said map display.

26. The system of claim 11 wherein each said mobile user station provides longitude and latitude information to said computer system.

27. The system of claim 11 wherein said location of said one of said mobile user stations is displayed graphically.

28. The system of claim 11 wherein said computer system stores data provided by said mobile user stations to derive some whether said data corresponds to actual traffic conditions.

29. The system of claim 11 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said mobile user station location to said one of said database and updates said traffic information database.

30. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:

(a) a plurality of traffic monitors, each said traffic monitor comprising at least a detector and a transmitter, and detector providing a signal including data representative of vehicular movement and said transmitter transmitting said signals;

(b) a detector that detects said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said detector and said monitors;

(d) a traffic user station connected to a global positioning system receiver, a display, and a communicating device;

(e) said computer system providing to said one of said mobile user stations traffic information representative of said signals transmitted by said traffic monitors;

(f) said traffic information transmitted by said computer system is displayed graphically on said display;

31. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:

- 22.** A system for providing traffic information to a plurality of mobile users connected to a network, comprising:
- (a) a plurality of traffic monitors, each said traffic monitor comprising at least a detector and a transmitter, said detector providing a signal including data representative of vehicular movement and said transmitter transmitting said signals;
 - (b) said traffic information transmitted by said computer system is displayed graphically on said display;
 - (c) wherein less than all available traffic information is displayed by said display.

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 display profiles, and otherwise provide input to traffic monitor 20 to facilitate collection of traffic data. For example, the video camera 22 could be remotely positioned to view a traffic lane of interest.

Traffic information may be provided to users in any suitable manner, such as the examples that follow. A user station 52 connected to the network 50. Preferably, the user station 52 includes a graphical display unit 54 (see FIG. 3). For example, the user station 52 may be a standard personal computer with a display monitor 54. The network 50 is preferably the Internet. However, the network 50 could also be a local area network or any other type of closed or open network, or could also be the telephone network. The user station 52 sends a signal over the network 50 to the computer system 40 requesting traffic information. In response to receiving a request from the user station 52, the computer system 40 transmits traffic information representative of the traffic information collected by the various traffic monitors 20 to the requesting user station 52. The computer system 40 may transmit average speeds detected by each of the traffic monitors 20 at each of their respective locations. The traffic information may be presented to the user as a web page. **The computer system may send traffic information corresponding to only some of the traffic monitors.**

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 The user may select which portions of the road 12 are of interest, and the computer system 40 may transmit traffic information corresponding to that portion of the road 12. FIG. 3 shows an exemplary display 54 displaying the traffic information provided by the computer system 40. The computer system 40 provides data from its various traffic monitors to the user station 52, such as data from a map database which is displayed as a road 12 on the display 54. The computer system 40 also provides traffic information collected by each, or a selected set, of the respective traffic monitors 20 which is displayed as portion 12A-12K within the traffic information derived from individual traffic monitor systems having a global positioning system location as described in detail below. In the exemplary display shown in FIG. 3, the portion 12A-12K display different colors or patterns representative of average vehicle speeds (for example, as values per hour) along different portions of the road 12. Of course, the display may display other types of information, such as traffic flow, vehicles per second, or vehicle frequency. The display 54 may include information in other graphical or text format to indicate the portions of the road displayed, such as location of adjacent stations or other camera 18.

While the display 54 shows one format for displaying the information, other formats for presenting the information may likewise be used, as shown. It is not necessary to provide a graphical representation of the road 12. Instead, information could be provided in a text format, for example, with point locations for monitors 20 and presenting text to each location.

Thus, the system may operate as monitors 20 detect or otherwise use traffic information. The traffic monitor information includes vehicle speed, per traffic flow, vehicle frequency, or other traffic data. The traffic monitors 20 continuously or may sample at intervals. Such signals may be either to the camera 18, or may be transmitted to monitors 20. The receiver 20 monitors

by the various traffic monitors 20 and passes these signals to the computer system 40. The computer system 40 receives the data from the traffic monitors 20. The computer system may calculate or process the traffic information for the user, as necessary. It is not necessary for the traffic monitors 20 to calculate traffic data. Instead, in response to a request from a user station 52, the computer system 40 provides the traffic information over the network 50 to the user station 52.

The system 10 has many advantages. It allows a user to receive comprehensive traffic information from a plurality of locations. It allows the user to obtain immediate information rather than waiting for the broadcast of information at specified times. Further, the amount of information provided by the system is far superior to that provided by any other traffic reporting system. A user can obtain immediate and comprehensive traffic conditions, such as average vehicle speed, traffic flow, or vehicle frequency, for a plurality of locations along a road. Where traffic monitors are provided along several different roads, a user may then select among the various alternative roads, depending on the traffic conditions for each road. The system also does not rely on the manual input of information, and thus provides information more accurately and more quickly. It also eliminates subjective descriptions of traffic information by providing measured data representative of traffic conditions.

In one embodiment, the computer system 40 also receives the signals generated by the video camera 22 at the respective traffic monitors 20. FIG. 3 shows an exemplary display 54 in which a video image 12B is provided. In this embodiment, the user may select from which traffic monitoring unit 20 the video image 12B is received from. For example, a user could initially select to view the image generated by the video camera 22 at a first location, and then view the image transmitted by another video camera 22, preferably at another traffic monitor 20, at a different location.

The system 10 preferably further includes the ability to send messages about road conditions. FIG. 3 shows such an exemplary message 12M in text format. The computer system 40 is capable of storing data messages and transmitting the data messages with the traffic information. The data messages would indicate events of particular interest to the user. For example, the text message 12M could indicate that there was an accident at a particular location or mileage, that construction was occurring at another location or mileage, or that highway conditions were particularly severe and that alternative routes should be selected. The camera 18 could provide message messages through which the user could scroll or so as to receive different messages in addition to the traffic information received from the various

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 traffic monitors 20 to the requesting user station 52. The computer system 40 may transmit average speeds detected by each of the traffic monitors 20 at each of their respective locations. The traffic information may be presented to the user as a web page. **The computer system may send traffic information corresponding to only some of the traffic monitors.** The user may select which portions of the road 12 are of interest, and the computer system 40 may transmit traffic information corresponding to that portion of the road 12. 25



“selected portions of said traffic information database”

- . . .a subset of which is selected by the commuter
- Certain data from the map database and certain data from the traffic information database are transmitted to the mobile user station

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 display profiles, and otherwise provide input to traffic monitor 20 to facilitate collection of traffic data. For example, the video camera 22 could be remotely positioned to view a traffic lane of interest.

Traffic information may be provided to users in any suitable manner, such as the examples that follow. A user station 52 connected to the network 30. Preferably, the user station 52 includes a graphical display unit 54 (see FIG. 3). For example, the user station 52 may be a standard personal computer with a display monitor 54. The network 30 is preferably the Internet. However, the network 30 could also be a local area network or any other type of closed or open network, or could also be the telephone network. The user station 52 sends a signal over the network 30 to the computer system 40 requesting traffic information. In response to receiving a request from the user station 52, the computer system 40 transmits traffic information representative of the traffic information collected by the various traffic monitors 20 to the requesting user station 52. The computer system 40 may transmit average speeds detected by each of the traffic monitors 20 at each of their respective locations. The traffic information may be presented to the user as a web page. **The computer system may send traffic information corresponding to only some of the traffic monitors.**

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 FIG. 3 shows an exemplary display 54 displaying the traffic information provided by the computer system 40. The computer system 40 provides data from its network which is representative of the road 12, such as data from a map database which is displayed as a road 12 on the display 54. The computer system 40 also provides traffic information collected by each, or a selected set, of the respective traffic monitors 20 which is displayed as portion 12a-12d. FIG. 3 shows the traffic information derived from individual traffic monitor systems having a global positioning system located as described in detail below. In the exemplary display shown in FIG. 3, the portion 12a-12d display different colors or patterns representative of average vehicle speeds (for example, as values per hour) along different portions of the road 12. Of course, the display may display other types of information, such as traffic flow (vehicles per second) or vehicle frequency. The display 54 may include information in other graphical or text format to indicate the portion of the road displayed, such as location of adjacent roads or place names 11a.

While the display 54 shows one format for displaying the information, other formats for presenting the information may likewise be used as desired. It is not necessary to provide a graphical representation of the road 12. Instead, information could be provided in a textual manner, such as, for example, with place locations for each of the traffic monitors 20 and presenting textual text

each location.

Thus, the system may operate as if monitors 20 direct or otherwise sense traffic information. The traffic monitors determine vehicle, vehicle speed, position, traffic flow, vehicle frequency, or other data. The traffic monitors 20 continuously, or may sample at intervals, the information and may sample at intervals. Such signals may be either to the network 30, or may be transmitted to monitors 20. The monitor 20 monitors 1

by the various traffic monitors 20 and passes these signals to the computer system 40. The computer system 40 receives the data from the traffic monitors 20. The computer system may calculate or process the traffic information for the user, as necessary. It is not necessary for the traffic monitors 20 to calculate traffic data. Instead, in response to a request from a user station 52, the computer system 40 provides the traffic information over the network 30 to the user station 52.

The system 10 has many advantages. It allows a user to receive comprehensive traffic information from a plurality of locations. It allows the user to obtain immediate information rather than waiting for the broadcast of information at specified times. Further, the amount of information provided by the system is far superior to that provided by any other traffic reporting system. A user can obtain immediate and comprehensive traffic conditions, such as average vehicle speed, traffic flow, or vehicle frequency, for a plurality of locations along a road. Where traffic monitors are provided along several different roads, a user may then select among the various alternative roads, depending on the traffic conditions for each road. The system also does not rely on the manual input of information, and thus provides information more accurately and more quickly. It also eliminates subjective descriptions of traffic information by providing measured data representative of traffic conditions.

In one embodiment, the computer system 40 also receives the signals generated by the video camera 22 at the respective traffic monitors 20. FIG. 3 shows an exemplary display 54 in which a video image 12b is provided. In this embodiment, the user may select from which traffic monitoring unit 20 the video image 12b is received from. For example, a user could initially select to view the image generated by the video camera 22 at a first location, and then later view the image transmitted by another video camera 20, preferably at another traffic monitor 20, at a different location.

The system 10 preferably further includes the ability to send messages about road conditions. FIG. 3 shows such an exemplary message 12c in text format. The computer system 40 is capable of storing data messages and transmitting the data messages with the traffic information. The data messages would indicate events of particular interest to the user. For example, the text message 12c could indicate that there was an accident at a particular location or mileage, that construction was occurring at another location or mileage, or that highway conditions were particularly severe and that alternative routes should be selected. The system 10 could provide message messages through which the user could scroll or so as to receive different messages in addition to the traffic information received from the various traffic monitors 20. In another embodiment, the user station 52 includes a voice controller capable of sending the

traffic monitors 20 to the requesting user station 52. The computer system 40 may transmit average speeds detected by each of the traffic monitors 20 at each of their respective locations. The traffic information may be presented to the user as a web page. The computer system may send traffic information corresponding to only some of the traffic monitors. **The user may select which portions** of the road 12 are of interest, and the computer system 40 may transmit traffic information corresponding to that portion of the road 12.

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Specific Term Construction

“providing...in response”



“providing...in response to”

- In response to a commuter's request, providing relevant traffic information for display by the mobile user station to minimize manipulation by the commuter while driving, the request and the response must occur simultaneously
- The computer system supplies traffic information in response to a request from a mobile user station
- The computer system, rather than only arbitrarily sending traffic information representative of said signals transmitted by said traffic monitors, is capable of sending traffic information representative of said signals transmitted by said traffic monitors to a mobile user station as a result of the mobile user station sending a request for traffic information to the computer system.

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3. The system of claim 1 wherein said traffic information is displayed with a user message.
 4. The system of claim 8 wherein said traffic detector detects vehicle speed.
 5. The system of claim 1 wherein at least one of said transmitters transmits directly to said receiver.
 6. The system of claim 1 wherein at least one of said transmitters transmits to another traffic receiver.
 7. The system of claim 1 wherein at least one of said traffic receivers includes a video camera.
 8. The system of claim 7 wherein said detector is a video camera.
 9. The system of claim 1 wherein said user provides location and speed information to said computer system.
 10. The system of claim 1 wherein said computer system receives said traffic information to provide to said mobile user station based on a signal received from said global positioning system receiver.
 11. The system of claim 10 wherein said computer system maintains a traffic information database containing data representative of traffic at a plurality of locations and updates said traffic information database in response to signals received from said mobile user station.
 12. The system of claim 11 wherein said mobile user station displays both the location of said mobile user station and traffic information graphically on said display.
 13. The system of claim 12 wherein said mobile user station has an input mechanism to select a mode in which traffic information is shown on said display.
 14. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:
 (a) a plurality of vehicles, each said vehicle comprising a mobile user station, a global positioning receiver and a transmitter, said mobile user station providing a signal including data representative of location of said mobile user station and at least a speed of said vehicle and an identification of said mobile user station and said transmitter; and
 (b) a receiver that receives said signals transmitted from said mobile user stations; and
 (c) a computer system interconnected with said receiver and said network, said computer system, in response to information from one of said mobile user stations, providing in response thereto to said mobile user station information representative of said signals transmitted by said mobile user stations; and
 (d) wherein said vehicle further comprises a display that displays graphically on said display, and
 (e) wherein said computer system has a map database and said computer system, in response to said information, transmits information representative of said map database, and said user station displays said information on said display.
 15. The system of claim 14 wherein said computer system maintains a traffic information database containing information representative of traffic at a plurality of locations and updates said traffic information database in response to signals received from stationary traffic receivers.
 16. The system of claim 15 wherein said computer system data provided by said mobile user stations more before updating said traffic information data.
 17. The system of claim 14 wherein the location of said mobile user station is displayed graphically

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and displayed together with said traffic information provided by said computer system.
 18. The system of claim 17 wherein said location of said vehicle is shown at a point on said display regardless of movement of said vehicle.
 19. The system of claim 17 wherein said displayed location of said vehicle directs to said location of said vehicle, so that the displayed location changes as the vehicle's location changes.
 20. The system of claim 14 wherein said mobile user station has an input mechanism to select different modes of displaying traffic information on said display.
 21. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:
 (a) a plurality of mobile user stations, each mobile user station being associated with a display, a global positioning system receiver and a communicating device to allow each of said mobile user stations to send and receive signals;
 (b) a computer system interconnected with another communicating device and a network, said computer system being capable of sending and receiving signals to and from said mobile user stations;
 (c) said computer system including a map database and a traffic information database, said traffic information database containing data representative of traffic at a plurality of locations;
 (d) at least one of said mobile user stations providing a request to said computer system for information

21. A system for providing traffic information to a plurality of mobile users connected to a network, comprising:
 (a) a plurality of mobile user stations, each mobile user station being associated with a display, a global positioning system receiver and a communicating device to allow each of said mobile user stations to send and receive signals;
 (d) at least one of said mobile user stations providing a request to said computer system for information together with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system providing to said one of said mobile user stations information representative of selected portions of said map database and selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations; and



Default Proof Credit v. Home Depot

- District Court found indefinite
- “If one employs means-plus-function language in a claim, one must set forth in the specification an adequate disclosure showing what is meant by that language.”
[at 1298]



Haemonentics v. Baxter (CAFC 2010)

- “Where, as here, claims are susceptible to only one reasonable interpretation and that interpretation results in a nonsensical construction of the claim as a whole, the claim must be invalidated.” (at 781)



Haemonentics v. Baxter (CAFC 2010)

- “Haemonentics argues...*[that the construction]* would yield an absurdity. Maybe so, but we do not redraft claims to contradict their plain language in order to avoid a nonsensical result.” (at 782)

11 automatically, or in response to a request for such information from a user.

In another embodiment, the computer system 40 automatically generates traffic reports to be sent to the user station 42 at predetermined times. For example, a user may indicate that s/he wishes to receive a traffic report every morning at 7:30 a.m. The computer system 40 automatically sends to the user station 42 at the predetermined time (7:30 a.m., for example) the traffic information collected from the traffic monitoring system 20. The information could be sent to be displayed, such as in FIG. 3, or could be sent alternatively to a text or graphical format via e-mail. The traffic report may also be provided in a format specific to the user's geographic region and/or driving habits, such as anticipated generally slow to be traveled. The computer system 40 may also automatically send the traffic information to a display at the user's vehicle in response to some event, such as turning on the vehicle, time, key press, etc.

In another embodiment, the computer system 40 allows a user to calculate the amount of time necessary to travel from one location to another location along the road 12. The user sends a request to the computer system 40 indicating the two locations along the road along which travel is desired. The user may, for example, indicate on the display by highlighting the two locations on the road 12 using a computer mouse. Alternatively, the two locations may include the user's current location, as determined by a vehicle-based GPS system, so that only the destination needs to be entered. The computer system 40 may calculate the anticipated amount of time it will take to travel from one point to the other point based upon the traffic data collected by the various traffic monitors 28 between the two locations. In addition, the system may calculate alternate routes in order to determine the fastest route in view of the traffic information. The computer system 40 then sends a signal back to the user station 42 to indicate the amount of time that the travel from the first to the second location will take. The same information may be provided to a user to assist in the user's travel.

In yet another embodiment of the invention, FIG. 7 shows a divided freeway with vehicle traffic flowing in opposite directions in each of the divided sections. Each section of the freeway 12 has multiple lanes 12A-12C. The traffic monitors 20 measure traffic on each of the lanes 12A-12C of each section 12 of the divided freeway. The monitors 20 may measure traffic on only one portion of the divided freeway, or may measure traffic conditions on each of the lanes of each of the sections of the divided freeway. The monitors need not measure traffic in multiple lanes may be a digital video camera.

FIG. 8 shows yet another embodiment of a display 54, which displays traffic information for each individual lane of the divided freeway, shown in FIG. 7. For example, in display 54, the traffic conditions in each individual lane 12A-12C, as displayed for the road section 12. By displaying conditions for each particular lane, the system has the advantage of allowing the user to anticipate particular lane problems which may occur ahead, such as a wreck 140 in lane 12C. In addition, in an alternative embodiment, the display 54 is capable of displaying the individual location of each individual vehicle on the road 12.

FIG. 4 shows an alternative embodiment of a user station 42. User station 52 is a mobile unit in a car 60. The user station 52 has monitoring and/or measuring means 44 for communicating with the network 30. Such monitoring and measuring means 44 may be any device capable of transmitting digital

or analog data, such as, for example, a digital or analog cellular phone.

The user station 52 may also be combined within a car 60 that further includes an associated global positioning system (GPS) receiver 42. The GPS receiver 42 receives signals from GPS satellites 70 which enable the GPS receiver to determine its location. Which a component of the user's traffic information may include the location of the user as determined by the GPS receiver 42. When the computer system 40 receives the request for the traffic information, it can back to the mobile user station 52 based on the location of the car 60 as provided by the GPS receiver 42. Alternatively, the computer system 40 may provide traffic information to the user station 52 which is contemporaneous with the position determined by the GPS receiver 42. The user station may also be a cellular phone with an integrated or associated GPS.

FIG. 6 shows a representative display of the traffic information provided by the computer system 40. The information provided is essentially the same as that shown in FIG. 3, except that the display 54 contains at 161 the position of the car 60. The mobile user station 52 provides a significant advantage in that it allows the commuter to immediately determine traffic information in the commuter's immediate vicinity based on the commuter's present location. The commuter does not have to wait for a periodic traffic report. Further, traffic conditions are provided at a plurality of locations, and the information is contemporaneous. Based on the receipt of such information, the commuter may decide to use an alternate route rather than continue on the current freeway.

Thus, in the embodiment shown in FIG. 4, the system provides the relevant traffic information to the commuter or user on a steady basis. The display may be tailored to provide the information for the current location of the commuter, such as the vehicle's location, that has already

20 FIG. 6 shows a representative display of the traffic information provided by the computer system 40. The information provided is essentially the same as that shown in FIG. 3, except that the display 54 contains at 161 the position of the car 60. The mobile user station 52 provides a significant advantage in that it allows the commuter to immediately determine traffic information in the commuter's immediate vicinity based on the commuter's present location. The commuter does not have to wait for a periodic traffic report. Further, traffic conditions are provided at a plurality of locations, and the information is contemporaneous. Based on the receipt of such information, the commuter may decide to use an alternate route rather than continue on the current freeway.

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