Google Inc. v. Traffic Information LLC Doc. 53 Att. 8

The enclosed file history file(s) are stored in electronic form as an Image File Wrapper (IFW). Files that have been converted to the IFW format are only available from the USPTO in electronic form.

This electronic file posted to the REEDFAX website is in the same format as received from the USPTO. Patent references will have been removed if you requested your order with "no references". Please contact REEDFAX with any questions about your order.

Dockets.Justia.com

US006785606B2

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

(10) **Patent No.: US 6,785,606 B2**
(45) **Date of Patent: *Aug. 31, 2004**

(54) **SYSTEM FOR PROVIDING TRAFFIC INFORMATION**

(76) Inventors: **Bruce W. DeKock**, 8850 SW. 71st Pl., Portland, OR (US) 97223; **Kevin L. Russell**, 2910 SW. Collins Ct., Portland, OR (US) 97219; **Richard J. Qian**, 2844 NW. 44th Ave., Camas, WA (US) 98607

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

This patent is subject to a terminal disclaimer.

(21) Appl. No.: **10/367,162**

(22) Filed: **Feb. 13, 2003**

(65) **Prior Publication Data**

US 2003/0225516 A1 Dec. 4, 2003

Related U.S. Application Data

(63) Continuation of application No. 10/218,850, filed on Aug. 13, 2002, now Pat. No. 6,574,548, which is a continuation of application No. 09/550,476, filed on Apr. 14, 2000, now Pat. No. 6,466,862, which is a continuation of application No. 09/352,156, filed on Jul. 12, 1999, now Pat. No. 6,573,942.

(60) Provisional application No. 60/130,399, filed on Apr. 19, 1999, provisional application No. 60/166,868, filed on Nov. 22, 1999, and provisional application No. 60/189,913, filed on Mar. 16, 2000.

(51) **Int. Cl.**[7] **G01S 5/00**

(52) **U.S. Cl.** **701/117**; 701/118

(58) **Field of Search** 701/119, 208, 701/201, 210, 219, 117, 118, 214; 340/995.13, 995.134; 349/207.1

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,402,117	A		3/1995	Zijderhand
5,539,645	A		7/1996	Mandhyan et al.
5,594,432	A		1/1997	Oliva et al.
5,673,039	A		9/1997	Pietzsch et al.
5,774,827	A		6/1998	Smith, Jr. et al.
5,812,069	A		9/1998	Albrecht et al.
5,845,227	A		12/1998	Peterson
5,889,477	A		3/1999	Fastenrath
5,926,113	A		7/1999	Jones et al.
5,959,577	A		9/1999	Fan et al.
5,982,298	A		11/1999	Lappenbusch et al.
5,987,374	A		11/1999	Akutsu et al.
5,987,377	A		11/1999	Westerlage et al.
6,107,940	A		8/2000	Grimm
6,150,961	A		11/2000	Alewine et al.
6,151,550	A	*	11/2000	Nakatani 701/117
6,466,862	B1	*	10/2002	DeKock et al. 701/117
6,574,548	B2	*	6/2003	DeKock et al. 701/117

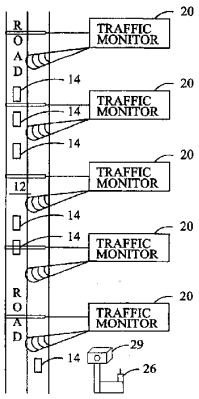
* cited by examiner

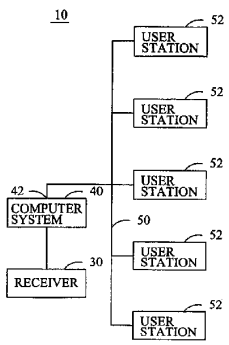
Primary Examiner—Marthe Y. Marc-Coleman
(74) *Attorney, Agent, or Firm*—Chernoff, Vilhauer, McClung, & Stenzel, LLP

(57) **ABSTRACT**

A system for providing traffic information to a plurality of mobile users connected to a network. The system comprises a plurality of traffic monitors, each comprising at least a traffic detector and a transmitter, the traffic detector generating a signal in response to vehicular traffic and the transmitter transmitting the signal. A receiver receives the signals from the traffic monitors. A computer system is connected to the receiver and is further connected to the network. The computer system in response to a request signal received from one of the users transmits in response thereto information representative of the signals transmitted by the traffic monitoring units. Alternative systems for gathering traffic information are disclosed.

23 Claims, 14 Drawing Sheets





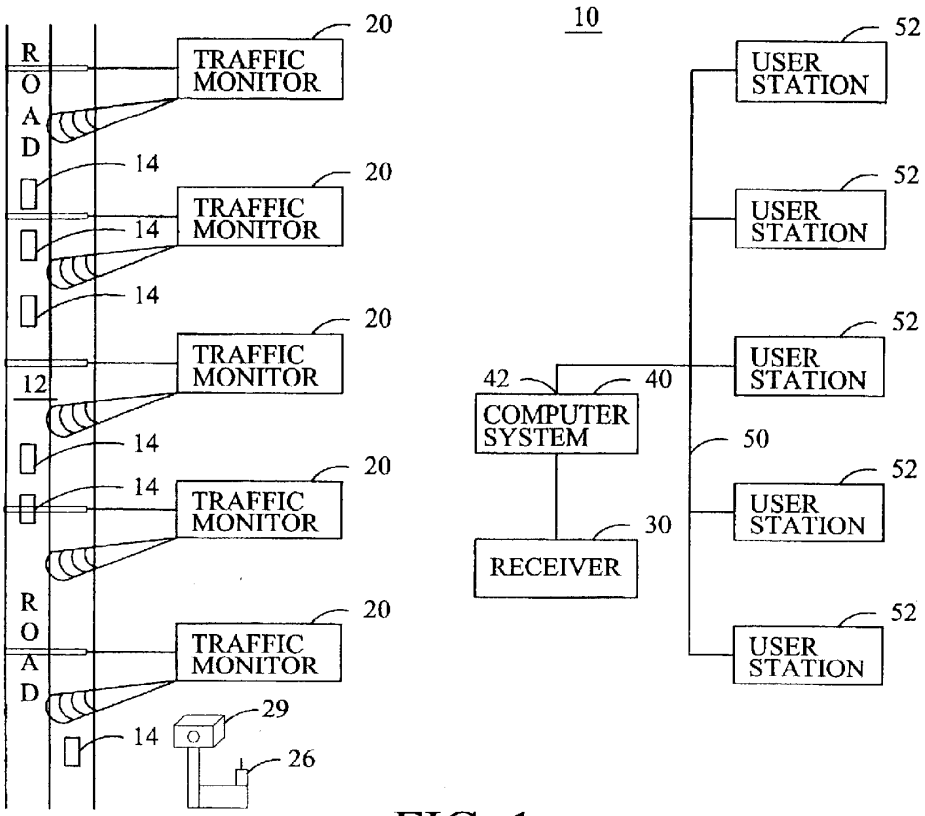

10
ROAD
ROAD
12
TRAFFIC MONITOR
TRAFFIC MONITOR
TRAFFIC MONITOR
TRAFFIC MONITOR
TRAFFIC MONITOR
20
14
29
26
USER STATION
USER STATION
USER STATION
USER STATION
USER STATION
52
COMPUTER SYSTEM
42
40
50
RECEIVER
30

FIG. 1

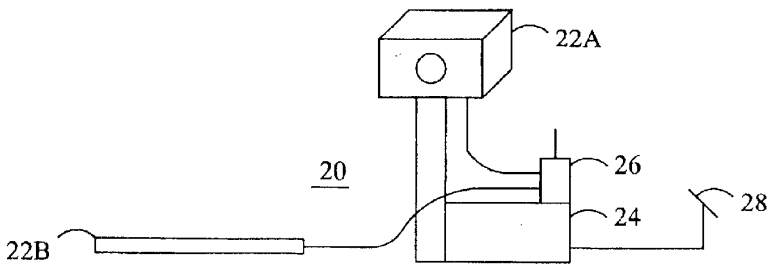

22A
20
26
24
28
22B

FIG. 2

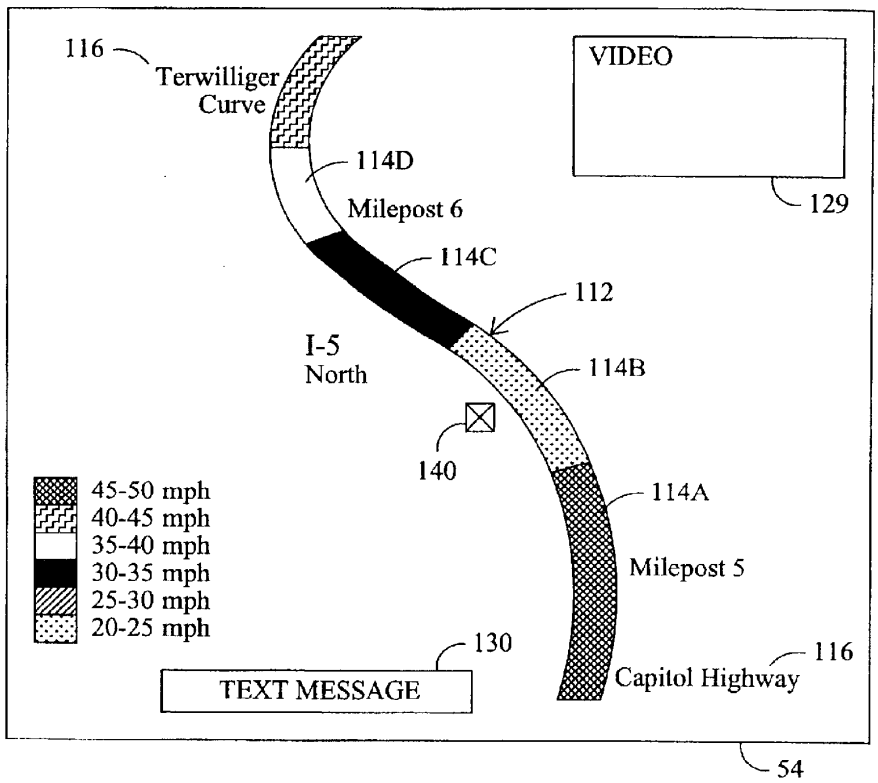
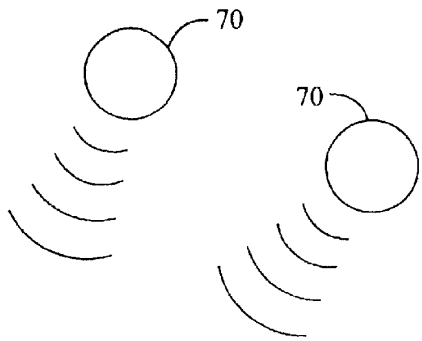

116
Terwilliger Curve
114D
Milepost 6
114C
112
I-5 North
114B
140
114A
Milepost 5
Capitol Highway
116
VIDEO
129
45-50 mph
40-45 mph
35-40 mph
30-35 mph
25-30 mph
20-25 mph
130
TEXT MESSAGE
54

FIG. 3



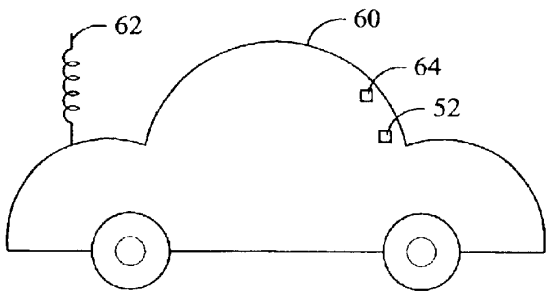


FIG. 4

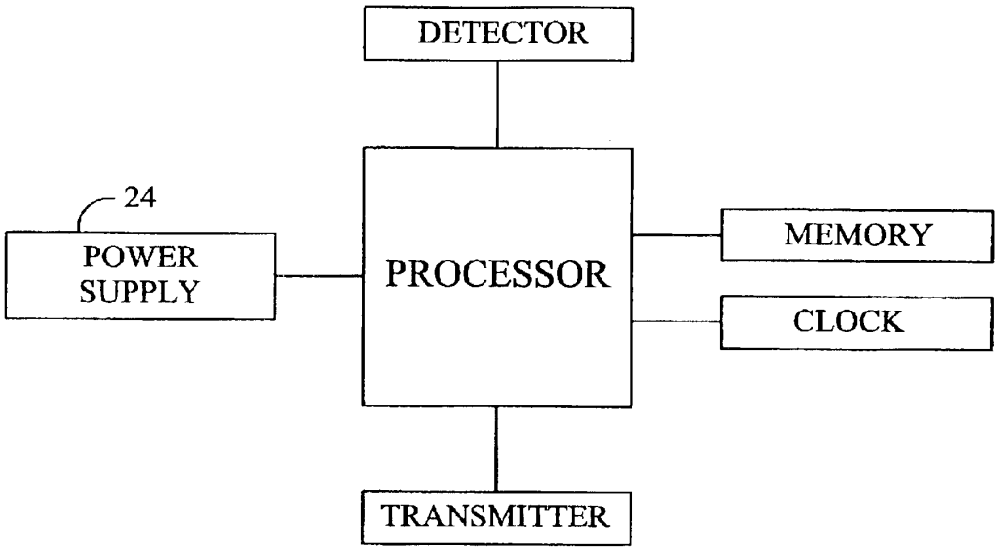

DETECTOR
24
POWER SUPPLY
PROCESSOR
MEMORY
CLOCK
TRANSMITTER

FIG. 5

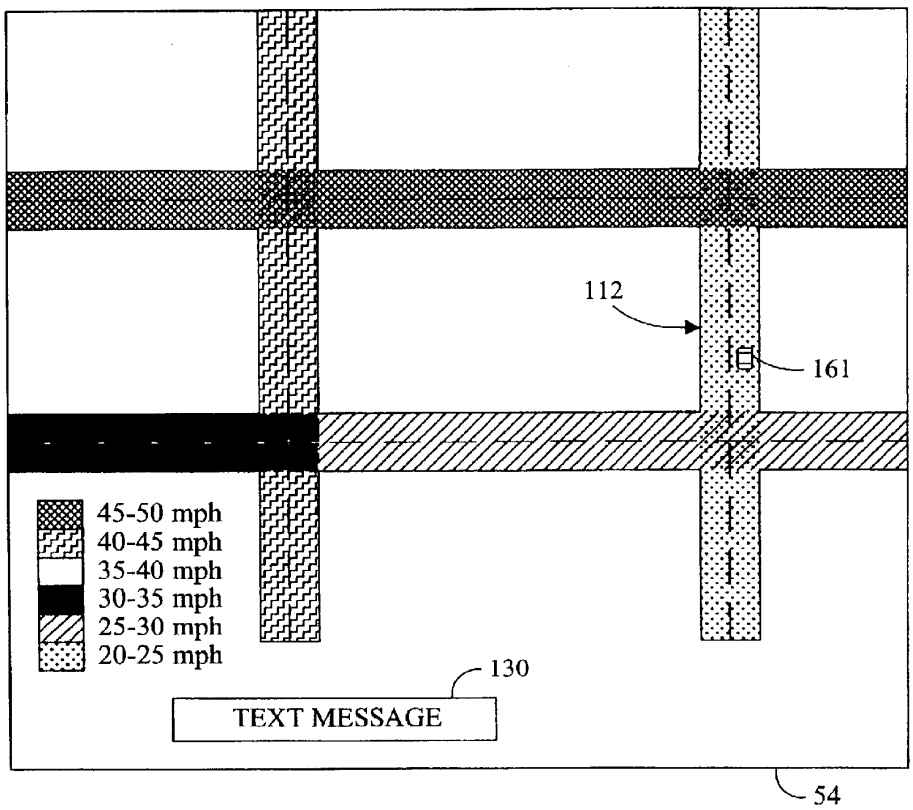

112
161
45-50 mph
40-45 mph
35-40 mph
30-35 mph
25-30 mph
20-25 mph
130
TEXT MESSAGE
54

FIG. 6

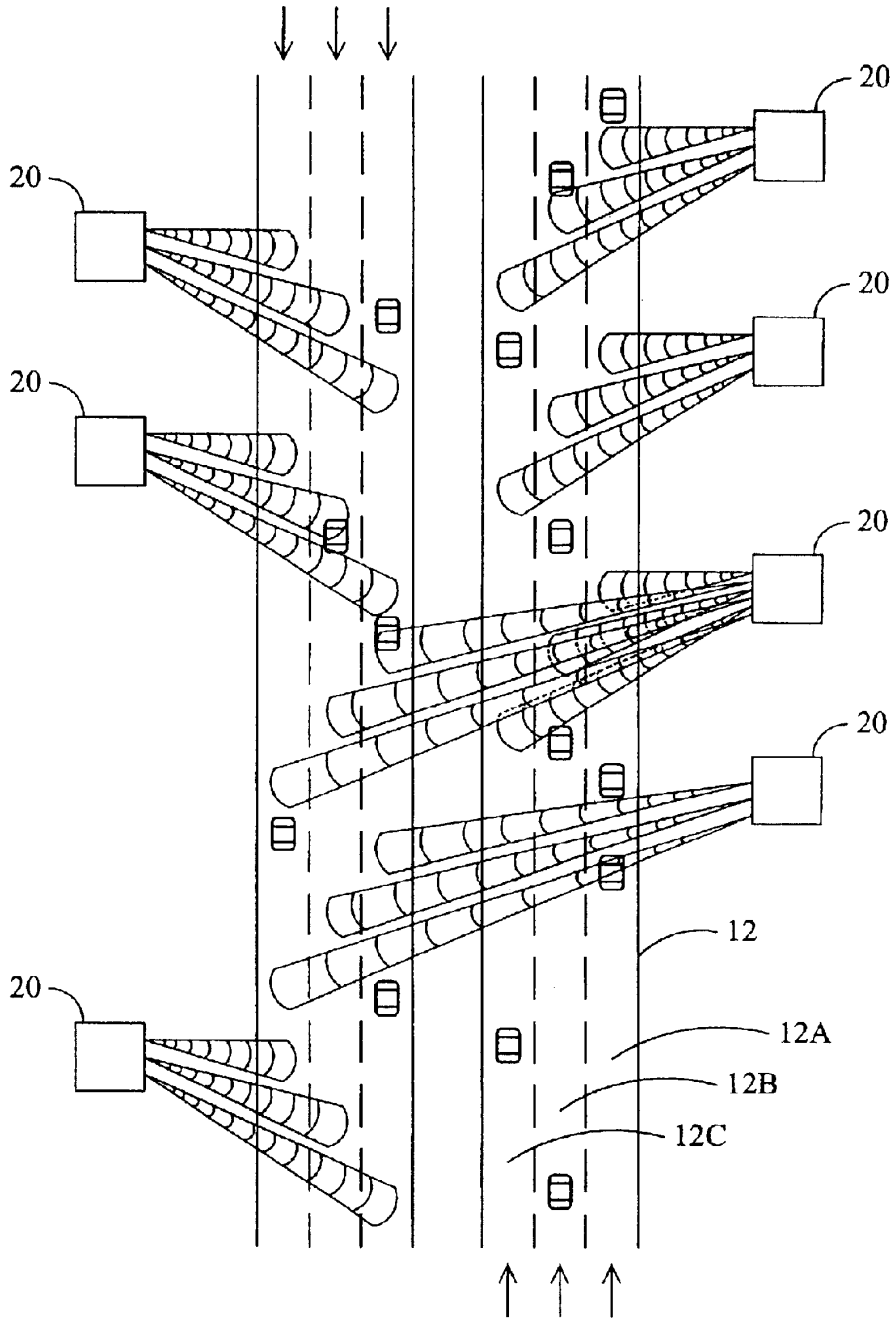


FIG. 7

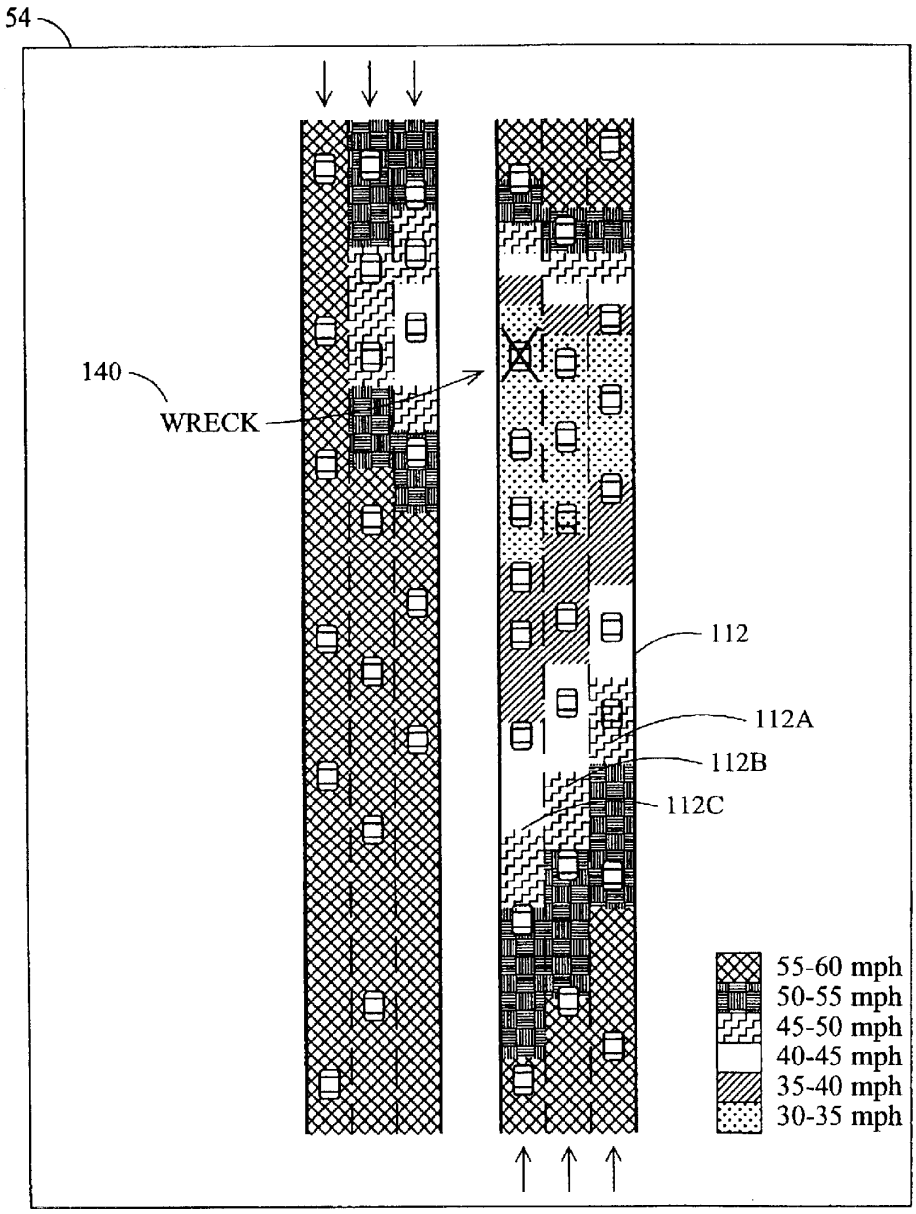

54
140
WRECK
112
112A
112B
112C
55-60 mph
50-55 mph
45-50 mph
40-45 mph
35-40 mph
30-35 mph

FIG. 8

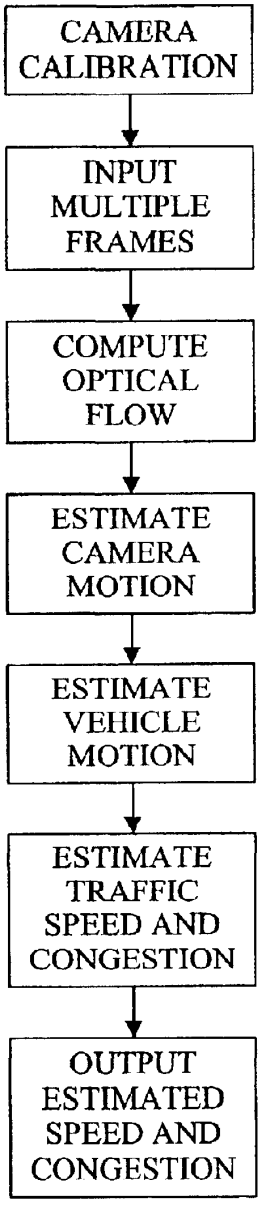

CAMERA CALIBRATION
INPUT MULTIPLE FRAMES
COMPUTE OPTICAL FLOW
ESTIMATE CAMERA MOTION
ESTIMATE VEHICLE MOTION
ESTIMATE TRAFFIC SPEED AND CONGESTION
OUTPUT ESTIMATED SPEED AND CONGESTION

FIG. 9

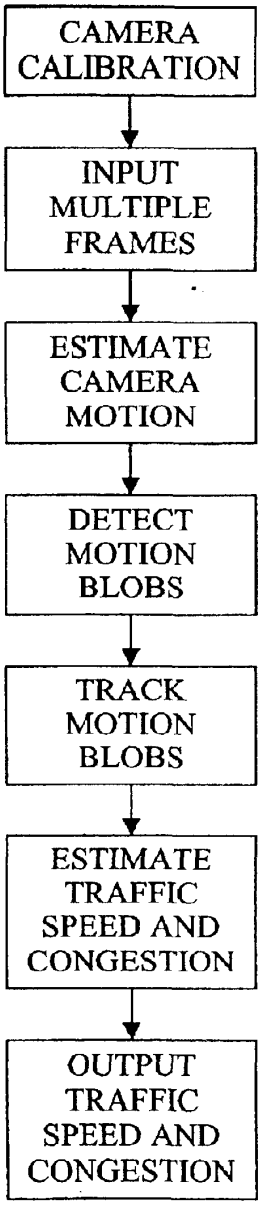

CAMERA CALIBRATION
INPUT MULTIPLE FRAMES
ESTIMATE CAMERA MOTION
DETECT MOTION BLOBS
TRACK MOTION BLOBS
ESTIMATE TRAFFIC SPEED AND CONGESTION
OUTPUT TRAFFIC SPEED AND CONGESTION

FIG. 10

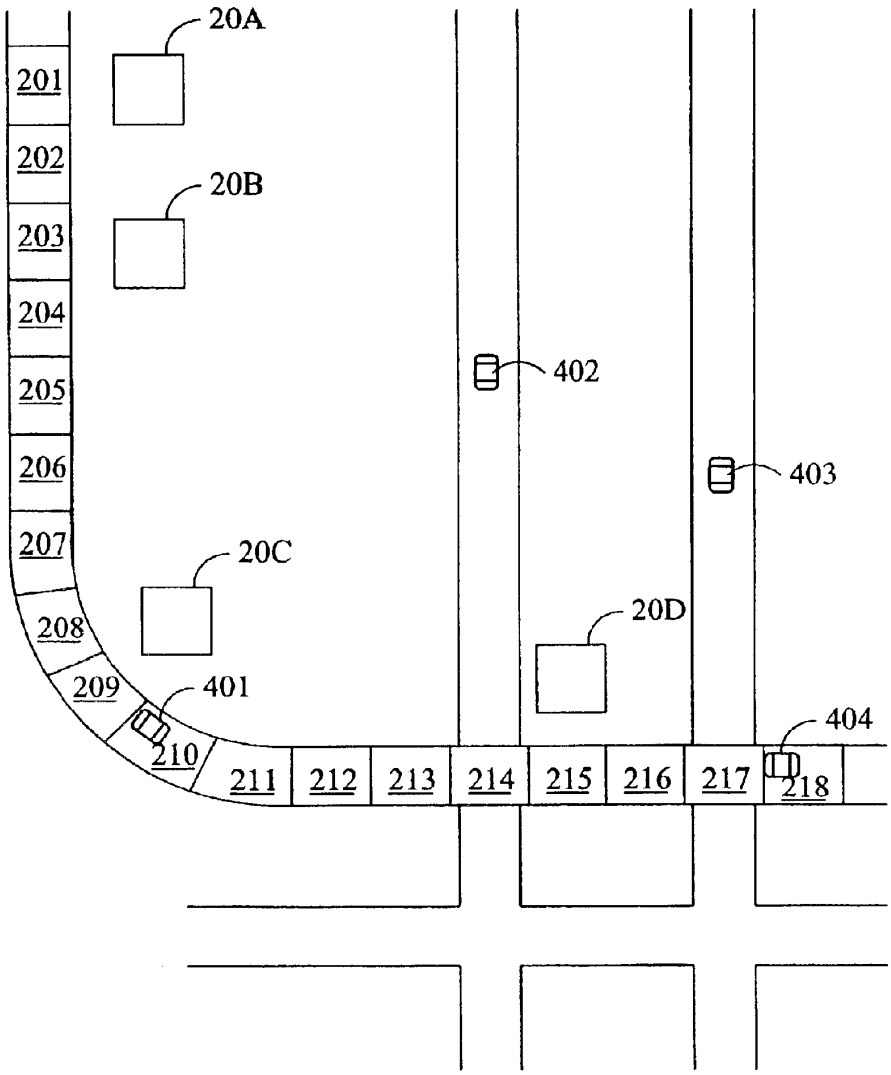

20A
201
202
20B
203
204
205
402
206
403
207
20C
208
20D
209
401
404
210
211
212
213
214
215
216
217
218

FIG. 11

LOCATION	LAT/LONG	ROAD	DIRECTION	VELOCITY
201	45°54'36"N/ 37°32'12"E	INTERSTATE	0°	55 MPH
202	⋮	LOCAL	27°	20 MPH
203		BYPASS	EAST	STOPPED
204		RESIDENTIAL	NW	⋮
205		⋮	⋮	
206				
207				
⋮				

FIG. 12

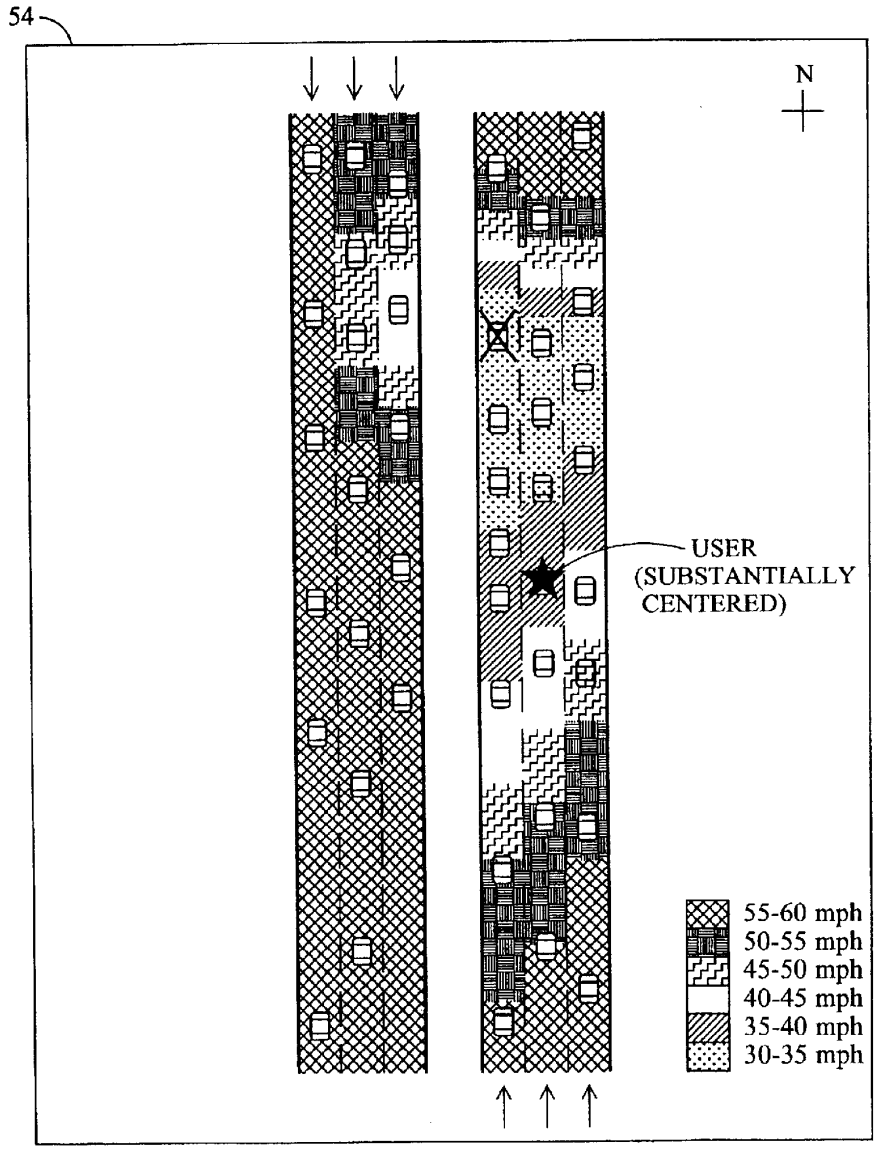

54
N
USER
(SUBSTANTIALLY
CENTERED)
55-60 mph
50-55 mph
45-50 mph
40-45 mph
35-40 mph
30-35 mph

FIG. 13

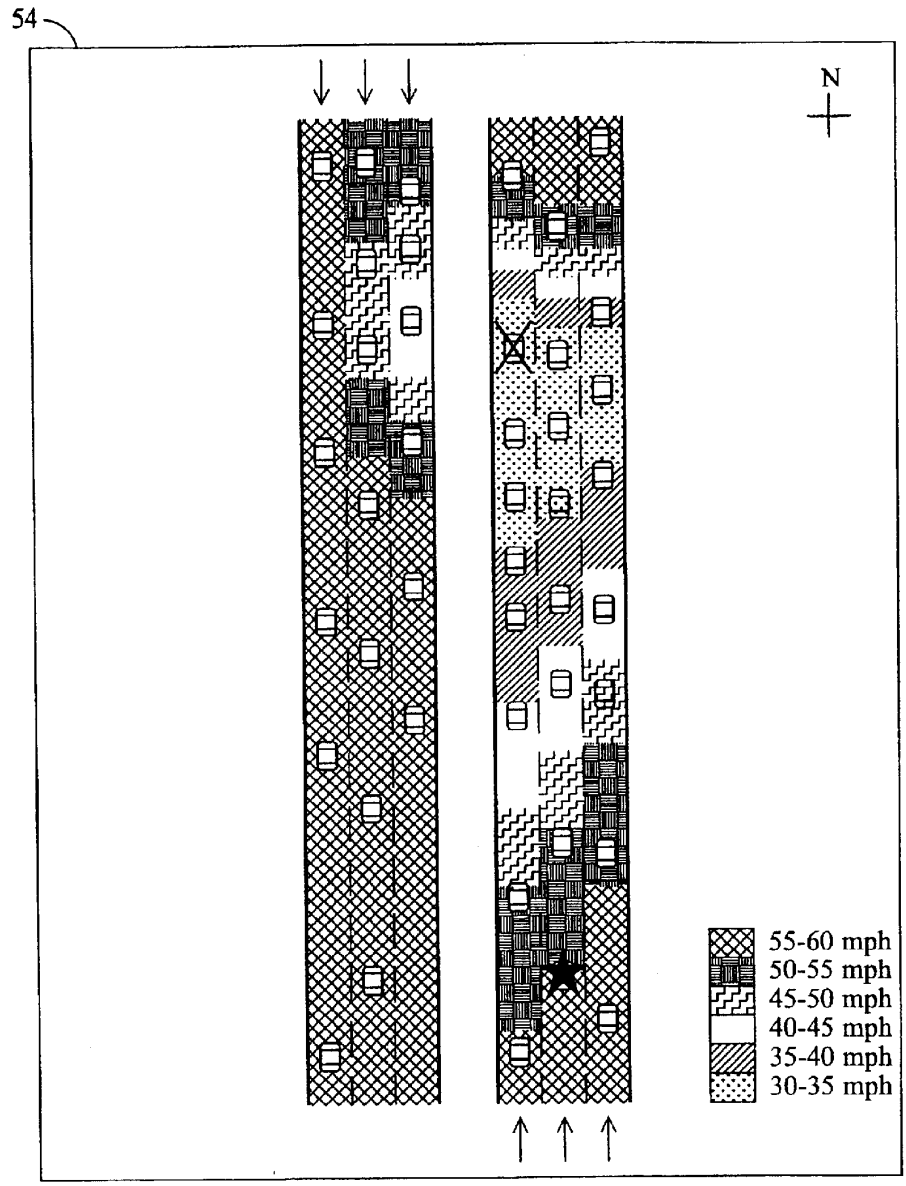


FIG. 14

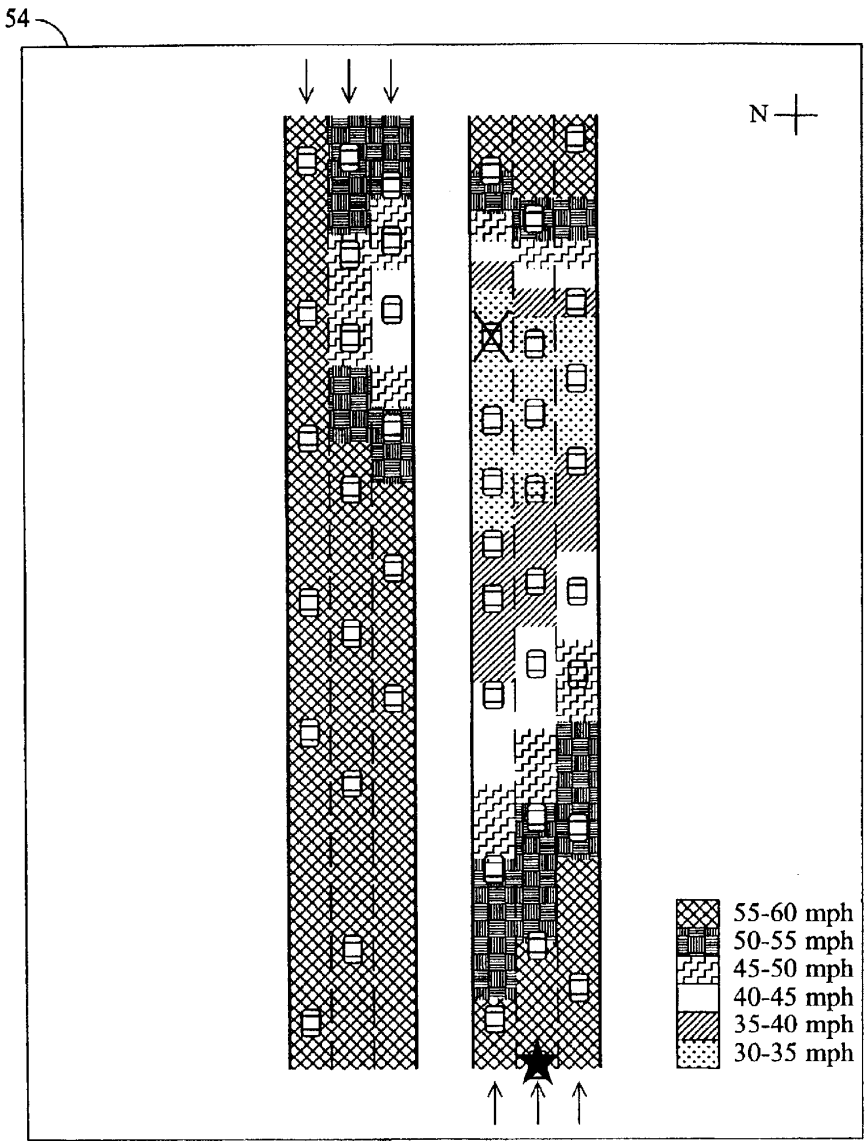


FIG. 15

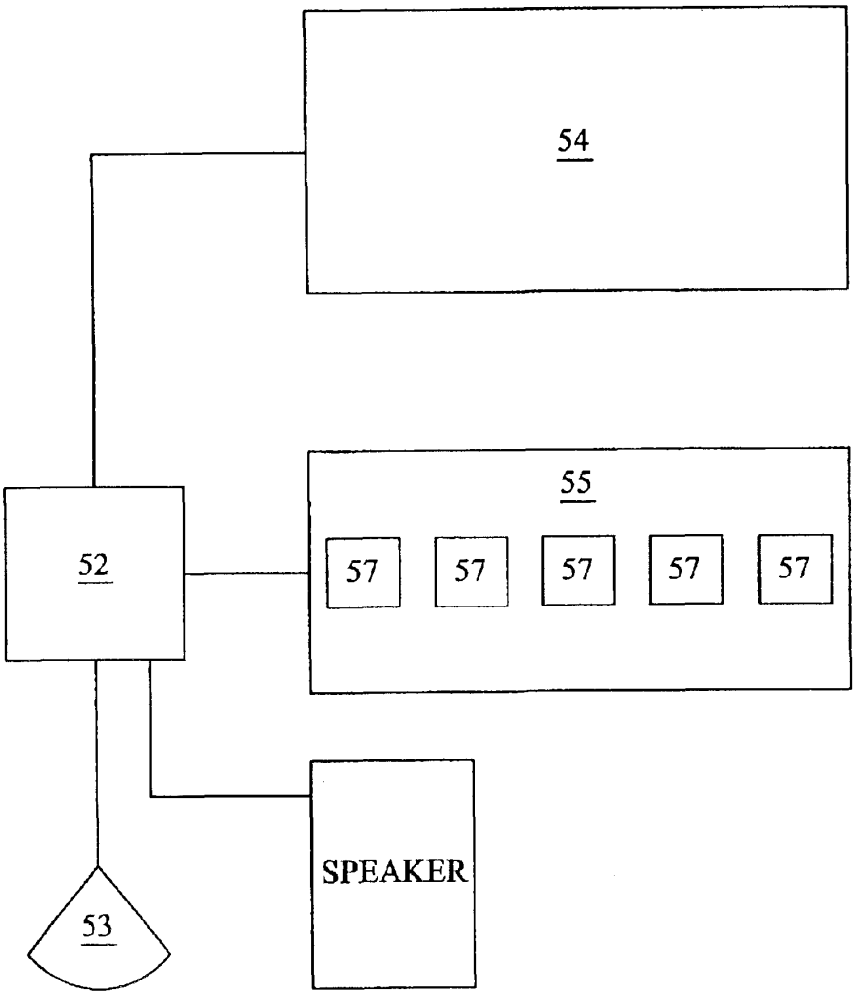


FIG. 16

SYSTEM FOR PROVIDING TRAFFIC INFORMATION

This application is a Continuation of U.S. application Ser. No. 10/218,850, filed Aug. 13, 2002, now U.S. Pat. No. 6,574,548; which additionally is a Continuation of U.S. application Ser. No. 09/550,476, filed on Apr. 14, 2000, now U.S. Pat. No. 6,466,862; which additionally is a Continuation of U.S. application Ser. No. 09/352,156, filed Jul. 12, 1999, now U.S. Pat. No. 6,573,942; which claims the benefit of U.S. Provisional Application No. 60/130,399 filed Apr. 19, 1999; U.S. Provisional Application No. 60/166,868 filed Nov. 22, 1999; and U.S. Provisional Application No. 60/189,913 filed Mar. 16, 2000.

BACKGROUND OF THE INVENTION

The present invention relates to a system for providing traffic information, and more particularly a system for providing traffic information to a plurality of mobile users connected to a network.

Commuters have a need for information relating to the congestion and traffic which they may encounter on a commute over a road, a highway, or a freeway. Unfortunately, the prior art methods of providing traffic information to commuters do not allow commuters to evaluate the extent to which there is congestion on a highway on which the commuter may wish to travel.

One known method of providing traffic information consists of radio reports. A radio station may broadcast traffic reports, such as from a helicopter that monitors traffic conditions over portions of a freeway. Unfortunately, these reports are usually intermittent in nature. Accordingly, to hear the report, the commuter must be listening to the radio station at the time the report is being broadcast on the radio. Further, the extent of the information provided is severely limited to broad generalizations. For example, the information provided during the broadcast may be limited to the area being currently viewed by the reporter, or the information may be based on a previous view at a prior time of another portion of the freeway. Some broadcasts may include multiple observers of different portions of the freeway, yet these systems also provide incomplete information relating to overall traffic patterns. In addition, the information provided is vague, subjective, and usually limited to broad generalities relating to traffic flow.

Another known traffic information system is provided by television broadcasts. In these systems, television stations may mount video cameras pointed at certain portions of a freeway, or may broadcast video images from a helicopter. The television station may periodically broadcast traffic reports and include in the traffic report a view of different portions of the freeway from the video cameras. Again, this system provides little useful information to a commuter. The commuter must be watching the broadcast at the time the information is being transmitted. However, by the time the commuter actually gets into his vehicle and enters a potentially congested area, the traffic may have changed. Further, the information provided is limited to those areas where the traffic is being monitored and may consist of stale information. Often the video image is limited to a small portion of the road, and shows traffic flowing in a single direction.

Yet another method to provide traffic information is to provide a website that is accessible using the Internet that contains traffic information. While these types of systems have the advantage of providing more up to date information, these systems typically provide a map for a large area. Thus, for a person commuting in a car, the system displays traffic information for many areas not of interest to the commuter. In addition, these types of systems require manipulation by the commuter to find the relevant traffic information. For example, while the map may allow the commuter to zoom in on a particular area, the user must provide inputs to the system to instruct the system to zoom in on a particular area. However, a commuter who is actively driving cannot operate a computer and drive at the same time. In addition, these systems may rely on manual entry of data received from subjective traffic reports and/or traffic sensors. Thus this method may additionally suffer from added cost due to manual labor, incorrect entry of data, and slow response to quickly changing traffic conditions.

Fan et al., U.S. Pat. No. 5,959,577, disclose a system for processing position and travel related information through a data processing station on a data network. In particular, Fan et al. teach the use of a GPS receiver to obtain a measured position fix of a mobile unit. The measured position fix is reported to the data processing station which associates the reported position with a map of the area. Typically, the measured position of the mobile unit is marked and identified by a marker on the map. The area map is then stored in the data processing station and made available for access by authorized monitor units or mobile units. An authorized monitor unit may request a specific area map. This permits shipping companies to monitor the location of their fleet and permits the mobile units to identify their current location in relation to a map, which is particularly suited for the application of navigation to a particular destination. In addition, Fan et al. teach that the measured position data transmitted from the mobile units may be used to calculate the speeds at which the vehicles travel. The collective speed data from the mobile units is then available for use by the monitor units, such as those at the shipping company, to route the vehicles away from traffic congestions and diversions. In this manner, the dispatcher at the shipping company, to which Fan et al. teaches the data is available to, may use the collective speed data to decide which vehicles to contact in order to reroute them.

Westerlage et al., U.S. Pat. Nos. 5,097,377 and 5,987,377, disclose a system for determining an expected time of arrival of a vehicle equipped with a mobile unit.

Zijderhand, U.S. Pat. No. 5,402,117, discloses a method of collecting traffic information to determine an origin-destination matrice without infringing upon the privacy of the users.

Mandhyan et al., U.S. Pat. No. 5,539,645, is related to monitoring movement of traffic along predetermined routes, where individual moving elements can move with a high degree of discretion as to speed except when congestion, accident or the like limit speeds. Mandhyan et al. uses the deployment of calibrant vehicles for collecting and reporting information which describes vehicle speeds actually being experienced along the routes of interest where the data are processed statistically as a function of the time of day. The output provides baseline data against which observations at a particular time, category, weather, event, and location can be compared, to identify the existence of abnormal conditions, and to quantify the abnormality. To determine abnormal conditions, Mandhyan et al. teach the use of probe vehicles. In particular, Mandhyan et al. is applicable to monitoring the flow of motor vehicles along roads which are subject to delays of sufficient frequency and severity that correction action or dissemination of information announcing a delay are economically desirable. Unfortunately, the use of probe vehicles may be expensive and the relevancy of the data is limited to the availability of the probe vehicles.

Lappenbusch et al., U.S. Pat. No. 5,982,298, disclose a traffic information system having servers that makes traffic data, images, and video clips available to a user interface on client devices. Lappenbusch et al. envision that the client devices are personal or desktop computers, network computers, set-top boxes, or intelligent televisions. The user interface includes a road map showing a plurality of road segments that a user can interactively select. Vehicular speed information is provided to the system from traffic sensors monitoring the traffic. In addition, the user interface has a road image area that changes as the user selects different road segments to show recent images of a currently selected road segment. Unfortunately, the system taught by Lappenbusch et al. is complicated to operate and requires significant user interaction to provide relevant data, which is suitable for such "stationary" traditional computing devices.

Smith, Jr. et al., U.S. Pat. No. 5,774,827, disclose a system to alleviate the need for sophisticated route guidance systems, where the commuter has a positioning system as well as a map database in a car. A central facility receives and stores current traffic information for preselected commuter routes from various current traffic information sources, such as local police authorities, toll-way authorities, spotters, or sensors deployed on the road ways to detect traffic flow. To achieve the elimination of sophisticated route guidance systems a portable device receives a travel time only for preselected commuter routes 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 commuter routes. If desired, the preselected commuter routes may be presented as a set of route segments, where each of the segments is coded to indicate commute time. In response, the user may choose an alternative route known by him that is different from any preselected commuter routes. 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 such that the central facility uses each present position to calculate at least a portion of the current travel information. By matching multiple positions of the portable device with known positions on the preselected route and measuring the time between two consecutive matched positions the central facility can obtain up-to-the minute traffic information to be used in broadcasting future travel times to other users of preselected commuter routes. Unfortunately, the system taught by Smith, Jr. et al. requires the user to define a set of preselected commuter routes for each route to be traveled, 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, presumably if the commute time of the preselected commuter routes are too long, which is difficult if the user is not already familiar with the area.

Pietzsch et al., U.S. Pat. No. 5,673,039, disclose a system for dynamic monitoring of the total traffic in a stretch of road equipped with monitoring and information-provision system, as well as warnings to drivers, and hence the possibility of regulating the traffic. The system does not require that the vehicles be equipped with appropriate sensors and transmitting equipment.

Akutsu et al., U.S. Pat. No. 5,987,374, disclose a vehicle traveling guidance system that includes data providing devices laid on a road and a vehicle. The vehicle includes a data transmitter for sending a data providing device traveling data of the vehicle when the vehicle passes over the vicinity of the data providing device and a data receiver for receiving data sent from the data providing device. The traveling data may include vehicle pass time or vehicle pass time and speed. The data providing devices laid 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 control center communicating through the data providing devices laid on the road can use the received traffic data from the vehicles to predict the occurrence of traffic congestion based on the pass time and speed of a vehicle. It is assumed that at a certain point, vehicles were traveling smoothly at a certain time and the speed of each vehicle has decreased drastically at the next time. In this case it is expected that traffic congestion will occur in the vicinity of that point. Therefore, smooth travel can be achieved by, for example, communicating to each vehicle data etc. indicating bypasses in order not to worsen 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 considering traffic flow.

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.

BRIEF SUMMARY OF THE INVENTION

The present invention overcomes 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 comprised of a plurality of traffic monitors, each comprising at least a traffic detector and a transmitter, the traffic detector generating a signal in response to vehicular 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 in response thereto information representative of the signals transmitted by the traffic monitors.

In a second separate aspect 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 a signal is generated at each of the locations representative of the traffic at each of the locations. Each of the signals is transmitted from each of the plurality of locations to a receiver. These signals are sent from the receiver to a computer system. The computer system receives a request from one of the users for traffic information. In response to the request, the computer system transmits information representative of the traffic at each of the plurality of locations to the user.

In a third separate aspect of the invention, a system provides traffic information to a plurality of users connected to a network. The system comprises a plurality of mobile user stations, each mobile user station being associated with the display, a global positioning system receiver and a communicating device to allow each of the mobile user

stations to send and receive signals. A computer system is interconnected with another communicating device in the network. The computer system is capable of sending and receiving signals to the mobile user stations using the other communicating device in the network. The computer system 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 mobile 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 commuter 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 vehicular 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 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 mobile user unit of the present invention.

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

FIG. **6** is an alternative exemplary display.

FIG. **7** shows a schematic view of another exemplary embodiment of a series of traffic monitors along a road.

FIG. **8** shows another exemplary display for a user station.

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

FIG. **10** is a flow chart for an alternative method of processing video 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 representative of the road system depicted in FIG. **11**.

FIG. **13** is an exemplary embodiment of a centered display.

FIG. **14** is an exemplary embodiment of an offset 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 inputting 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 **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**.

FIG. **2** shows a front elevational view of an exemplary embodiment of a traffic monitor **20**. The traffic monitor **20** has a detector **22** for measuring or otherwise sensing traffic. FIG. **2** shows two different embodiments **22**A and **22**B of a 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 **22**A could employ radio waves, light waves (optical or infrared), microwaves, sound waves, analog signals, digital signals, doppler shifts, or any other type of system to measure traffic conditions (data). In one embodiment, the detector **22**A uses a transmitted beam to measure the velocity of the vehicles **14** passing along the road **12**, such as with a commercial radar gun or speed detector commonly used by police. Alternatively, the detector **22**A may detect when cars having magnetic tags or markers pass. The detector **22**A may either detect signals reflected from the vehicle or signals transmitted by the vehicles.

The traffic monitor **20** is shown with an alternative embodiment **22**B consisting of one or more pressure sensitive detectors which extends across the road **12**. Preferably two spaced apart detectors are positioned at a predetermined spacing to make the velocity determination readily available. The pressure sensitive detector **22**B detects when a vehicle passes over the detector **22**B. Such a pressure sensitive detector may be used alone or in combination with detector **22**A to measure the frequency or speed (velocity) of the traffic passing along the road **12**. Likewise, the detector **22**A may be used alone or in combination with the detector

22B to measure the frequency or speed (velocity) of the traffic passing along the road **12**. Alternatively, detector **22**B could be a wire loop buried in the road to measure changing magnetic fields as vehicles pass over the loop.

The detector **22** may measure traffic conditions in a single lane of a freeway or road, or may measure average traffic information across several lanes. The detector **22** could also be embedded in each lane of a road or freeway, such as with a pressure sensitive detector **22**B. Alternatively, individual detectors could be embedded in a roadway which would sense signals or conditions generated by passing vehicles. For example, each vehicle could include a magnet or could include a signaling device which would be detected by the detector, which could be an electromagnetic sensor or a signal receiver.

Referring to FIG. **5**, the traffic monitors **20** may also include a processor and a memory for collecting, processing, and storing traffic information provided by the detector **22**.

The traffic monitor **20** preferably further includes a transmitter **26** for transmitting the traffic information collected by the detector **22**. The transmitter **26** may be any type of device capable of transmitting or otherwise providing data in either digital or analog form, either through the air or through a conductor. For example, the transmitter could be a digital or analog cellular transmitter, a radio transmitter, a microwave transmitter, or a transmitter connected to a wire, such as a coaxial cable or a telephone line. The transmitter **26** is shown as transmitting the signals through the air to a receiver **30**. Alternatively, the transmitter **26** could transmit the data to an intermediate receiver before being transmitted to the receiver **30**. For example, several traffic monitors **20** could transmit traffic information in a daisy chain manner from one end of a road **12** to the last traffic monitor **20** at the other end of the road before being transmitted to receiver **30**. To facilitate this type of transmission most traffic monitors **20** would require a receiver. Alternatively, one or more traffic monitors **20** could transmit data to other traffic monitors **20**, which in turn transmit the data to the receiver **30**. In order to conserve power, the transmitter **26** and the detectors **22** preferably transmit and sense information periodically rather than continuously. Further, the traffic information generated by the detector **22** is preferably averaged, or otherwise statistically modified, over a period of time so as to limit the amount of data that needs to be transmitted and increase its accuracy.

In one embodiment, the traffic monitoring unit **20** may further include a video camera **29**. The video camera **29** is also connected to the transmitter **26**, so that the transmitter **26** may transmit signals corresponding to the image sensed by the video camera **29**. Alternatively, the traffic monitors **20** may be replaced by video cameras **29**. Multiple images may be obtained by a video camera and the speed of the vehicles **14** determined based on image analysis of multiple frames from the video camera(s).

One preferred type of monitor **20** utilizes signals from a digital video camera to provide the traffic information. Traffic-related information may be obtained by analyzing the video sequences from the monitoring video cameras **29**. The information may include how fast the traffic moves and how congested the road is. The speed of the traffic may be derived by measuring the speed of vehicles in the video. The degree of congestion may be estimated by counting the number of vehicles in the video. This invention provides two algorithms for estimating traffic speed and road congestion based on video input.

The first algorithm is based on optical flow and its flow diagram is shown in FIG. **9**. First, the algorithm performs camera calibration based on the input video of the road and the physical measurements of certain markings on the road. Then the algorithm (1) takes a number of frames from the input video; (2) computes optical flow; (3) estimates camera motion which may be caused by wind, etc., (4) estimates independent vehicle motion after compensating the camera motion; (5) estimates traffic speed based on the averaged vehicle motion and the camera parameters obtained from the camera calibration step; estimates road congestion by counting the number of independent motion components; and (6) outputs the estimated speed and congestion results.

The second algorithm is based on motion blob tracking and its bock diagram is shown in FIG. **10**. First, the algorithm performs camera calibration based on the input video of the road and the physical measurements of certain markings on the road. The algorithm (1) takes a number of frames from the input video; (2) estimates camera motion; (3) detects independent motion blobs after compensating the camera motion; (4) tracks motion blobs; (5) estimates traffic speed based on the averaged blob motion and the camera parameters obtained from the camera calibration step; estimates road congestion by counting the number of independent motion blobs; and (6) outputs the estimated speed and congestion results.

Traffic monitor **20** further includes a power supply **24**. The power supply **24** is preferably a battery, or may alternatively be a power line, such as a 12 or 120 volt power line. The traffic monitor **20** is shown with an optional solar power supply **28**. The power supply **24** or **28** provides the power necessary for the detectors **22**A and/or **22**B, the transmitter **26**, and any other electronics, such as a computer system and/or video camera.

The receiver **30** receives the signals from the traffic monitors **20** and/or video cameras **29**. The receiver **30** may be any device capable of receiving information (data) such as in either an analog or a digital form. For example, the receiver **30** may be a digital or analog cellular receiver, a standard phone, a radio receiver, an antenna, or a data port capable of receiving analog or digital information, such as that transmitted pursuant to a data protocol.

The receiver **30** receives the information from the traffic monitors **20** and/or video cameras **29** and passes that information to a computer system **40**. The computer system **40** preferably includes a processor (such as a general purpose processor, ASIC, DSP, etc.), a clock, a power supply, and a memory. The computer system **40** preferably has a port **42**, or any type of interconnection, to interconnect the computer system **40** with the network **50**. Preferably, the computer system **40** includes information representative of the road **12** along which the traffic monitors **20** are located, such as a map database. The computer system **40** receives the traffic information transmitted by the respective traffic monitors **20**. The information transmitted by the traffic monitors **20** includes the location or identification of each particular traffic monitor **20** together with the data representative of the traffic data provided by the detector **22** and/or video camera **29** at each traffic monitor **20**. The computer system **40** may manipulate the traffic information in some manner, as necessary, so as to provide average speeds or other statistical data. In the event of video, the computer system **40** may process the images to determine the speed of vehicles. Also, the video may be provided. Alternatively, the user stations may process the traffic information.

In one embodiment, both the receiver **26** of the traffic monitors and the transmitter **30** of computer system are each capable of receiving and transmitting data. This allows for

two way communication between the monitor **20** and the computer system **40**. Thus, the computer system **40** could remotely operate the traffic monitor **20** to change settings, diagnose problems, and otherwise provide input to traffic monitor **20** to facilitate collection of traffic data. For example, the video camera **29** 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** is connected to the network **50**. Preferably, the user station **52** includes a graphic 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. 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 memory which is representative of the road **12**, such as data from a map database, which is displayed as a road **112** 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 in portions **114***a*–**114***d* and/or the traffic information derived from individual mobile user stations having a global positioning system locator as described in detail below. In the exemplary display shown in FIG. **3**, the portions **114***a*–**114***d* display different colors or patterns representative of average vehicle speeds (for example, in miles per hour) along different portions of the road **112**. 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 either graphical or text format to indicate the portion of the road displayed, such as location of milepost markers or place names **116**.

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, mile post locations for each of the traffic monitors **20** and presenting textual traffic information for each location.

Thus, the system may operate as follows. The traffic monitors **20** detect or otherwise sense traffic to provide traffic information. The traffic monitors **20** may detect or otherwise calculate vehicle speed, average vehicle speed, traffic flow, vehicle frequency, or other data representative of the traffic. The traffic monitors **20** may sample either continuously, or may sample at intervals to conserve power. The transmitter **26** transmits the signals provided by the traffic monitors **20** to the receiver **30** either continuously or at intervals. Such signals may be either transmitted directly to the receiver **30**, or may be transmitted through other traffic monitors **20**. The receiver **30** receives the signals received 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 users, as necessary. It is not necessary for the traffic monitors **20** to calculate traffic data, if desired. 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 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 are provided along several different roads, a commuter may then select among the various alternative routes, 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 cameras **29** at the respective traffic monitors **20**. FIG. **3** shows an exemplary display **54** in which a video image **129** is provided. In this embodiment, the user may select from which traffic monitoring unit **20** the video image **129** is to be received from. For example, a user could initially select to view the image generated by the video camera at a first location, and then later view the image transmitted by another video camera **29**, 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 **130** 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 items of particular interest to the commuter. For example, the text message **130** could indicate that there was an accident at a particular location or milepost, that construction was occurring at another location or milepost, or that highway conditions were particularly severe and that alternative routes should be selected. The system **10** could provide multiple messages through which the user could scroll 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 synthesizer capable of reading the messages to the user.

In yet another embodiment, the system **10** may also provide additional graphical information relating to traffic conditions. For example, the computer system **40** could transmit the location of an accident or construction site along the road **12**. The information would be displayed on display **54** as an icon or other symbol at the location indicating the presence of an accident or highway construction. Such an icon is shown at **140** in FIG. **3**. Alternatively, the computer system could also display an icon representative of a restaurant, gas station, hospital, rest area, or

roadside attraction. In such a system, the computer system would contain or be linked to a database containing such information. The information could be displayed automatically, or in response to a request for such information from a user.

In another exemplary embodiment, the computer system **40** automatically generates traffic reports to be sent to the user station **52** at predetermined times. For example, a user may indicate that it wishes to receive a traffic report every morning at 7:30 a.m. The computer system **40** automatically sends to the user station **52** at the predetermined time (7:30 a.m., for example) the traffic information collected from the traffic monitoring units **20**. The information could be sent to be displayed, such as in FIG. **3**, or could be sent alternatively in 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 user's driving habits, such as anticipated (potential) route to be traveled. The computer system **40** may also automatically send the traffic information to a display in 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 **112** 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** then calculates 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 **20** between the two locations. In addition, the system may calculate alternative 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 **52** to indicate the amount of time that the travel from the first to the second location will take. The route determined as the best may be overlaid on a map to assist the user in 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 **12**A–**12**C. The traffic monitors **20** measure traffic in each of the lanes **12**A–**12**C 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 in each of the lanes of each of the sections of the divided freeway. The monitor used to 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 **112**A–**112**C is displayed for the road section **112**. 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 **112**C. In addition, in an alternative embodiment, the display **54** is capable of displaying the individual location of each individual vehicle on the road **112**.

FIG. **4** shows an alternative embodiment of a user station **52**. User station **52** is a mobile unit in a car **60**. User station **52** has transmitting and/or receiving units **64** for communicating with the network **50**. Such transmitting and receiving units **64** may be any devices capable of transmitting digital or analog data, such as, for example, a digital or analog cellular phone. The user station **52** may also be contained within a car **60** that further includes an associated global positioning system (GPS) receiver **62**. The GPS receiver **62** receives signals from GPS satellites **70** which enable the GPS receiver to determine its location. When a commuter requests traffic information using the mobile user station **52**, the request for traffic information may include the location of the user as determined by the GPS receiver **62**. When the computer system **40** receives this request, it provides traffic information back to the mobile user station **52** based on the location of the car **60** as provided by the GPS receiver **62**. Alternatively, the computer system **40** may provide traffic information to the user station **52** which in combination with the position determined by the GPS receiver **62** displays suitable data to the user on a display or audibly. 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 timely basis. The display may be tailored to provide the information for the current location of the commuter, together with the upcoming traffic that lies ahead.

In a preferred embodiment, the system obtains traffic information from users that have a GPS receiver **62**. In this system, whenever a user station **52** requests traffic information from the computer system **40**, the computer system **40** associates a velocity (speed) of that particular user with its current location. The velocity may be determined through a variety of methods. In one system, when the user requests traffic information, the user station **52** supplies not only its location but also its current velocity. The user station **52** may obtain its current velocity in any fashion. For example, the user station **52** may track its location over time using the GPS receiver **62**, and also keep track of the time associated with each location by using an internal clock. The velocity could then be calculated by simply dividing the difference between respective locations by respective times. Alternatively, the user station **52** may be connected to the vehicle's speedometer or odometer, and measure velocity using information provided by the vehicle **60** itself Alternatively, the computer system **40** itself could calculate the velocity of each user. In such a system, each user station **52** would provide the computer system **40** with a unique identification code together with its location. The computer system **40** then associates a time using an internal clock with each location reported by each user. Preferably, the GPS location is sent together with the current time at the user station so that delays incurred in transmission do not change the result. The velocity of each user could then be calculated

by calculating the difference in location for a particular user (identified by its unique identification code) by the respective times associated with each of these locations.

Thus, the computer system **40** develops a database consisting of the location of a plurality of users together with the respective velocities of each of the users. The computer system **40** thus has traffic information consisting at least of the velocity of the traffic for a plurality of locations corresponding to the locations for each of the reporting users. It is preferred in such a system that each user station **52** would contribute to the database, but the computer system could use data from fewer than all of the user stations **52** either requesting information or operating. The system may thus use the information received from the user stations **52** either to calibrate the traffic information provided by monitors **20**, or to supplement the traffic information provided by the traffic monitors **20**. Alternatively, where the number of users is sufficiently large, the traffic monitors **20** may no longer be necessary, because the users themselves through mobile user stations **52** and GPS receivers **62** provide enough traffic information to generate useful displays of traffic information. Thus, the system may provide traffic information without the use of monitors **20** at all, relying solely on information derived from the mobile user stations **52**. With a large number of users at a plurality of different locations, the computer system **40** would develop a database having a large number of velocities associated with a large number of geographic locations. Ideally, if every commuter on a road had a user station **52** with a GPS receiver **62**, the computer system **40** would provide not only velocity data but also traffic density or traffic frequency data. Even without every vehicle having a user station **52** providing data to the computer system **40**, traffic density or traffic frequency could be calculated using statistical techniques that correlate the reporting user stations **52** with known traffic patterns.

Thus, the combination of the mobile user station **52**, GPS receiver and transmitting and receiving 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.

In the system described above using mobile user stations **52** in vehicles, the user station may initiate contact with the computer system **40** by initiating a telephone call to the computer system **40**. Alternatively, the computer system **40** could initiate a call to the user station **52**, such as over the Internet using a web browser. The user station **52** would respond with an appropriate signal if information was requested. The user station **52** could also, even if no information was desired, provide its current location (preferably with current time), and optionally its velocity as well, to allow the computer system **40** to gather additional traffic information. This would be useful in the case of vehicle based Internet browsing for other purposes so that the traffic information would be updated for that user and others. In yet another alternative, the user station **52** would initiate the request to the computer system **40**, indicating that traffic information was desired. The computer system **40** would then respond at a series of timed intervals for a set length of time, for example, providing updates every two minutes for thirty minutes.

In yet another alternative embodiment of the system **10**, the mobile user station **52** is a cellular telephone. The computer system **40** includes a voice synthesizer. A user may telephone the computer system **40** over a cellular telephone network. In response to a request for highway conditions, the computer system **40** generates a traffic report and transmits the information using the voice synthesizer so that the traffic information may be heard and understood over the commuter's cellular telephone. The location of the user may be determined by an associated GPS receiver, or alternatively by triangulating the location of the user by measuring the distance between the user and several different transmission receiving towers in different cells.

In yet another embodiment of the present invention the computer system **40** or user station **52** may calculate the best route, such as the fastest, between a starting point and a destination based on the current traffic conditions. This functionality may further be provided in the mobile user station **52** in the car **60** so that the driver may calculate the best route to accommodate for changing traffic conditions. This also assists the driver in unfamiliar cities where he may be unfamiliar with anticipated traffic patterns. The functionality of providing current traffic conditions and/or best route calculations may be overlaid on maps available for GPS systems, household computers, and mobile user stations.

In addition, an early warning system may be incorporated into the computer system, user station, or mobile user station to provide warning of impending traffic jams, such as the result of a traffic accident. For example, if the average vehicle speed on a portion of a road ahead of a driver is less than a preselected velocity, such as 25 mph, the computer system **40** may send a warning signal to the mobile user station **52**. Alternatively, a velocity less than a preselected percentage or other measure of the anticipated velocity for the particular road may be used as the warning basis. It is also envisioned within the scope of the invention that data communications may be accomplished using radio broadcasts, preferably encoded in some manner.

Preferably, the computer system **40** and/or the mobile user station **52** in a vehicle **60** has stored in its associated memory a map database representative of the road or highway network that contains longitude and latitude information associated with various geographic locations on the map. This allows easy integration of traffic data that has associated longitude and latitude information. For example, along a particular section of a highway, the map database contains the latitude and longitude of selected locations of the highway. The latitude and longitude of the various traffic sensors **20** may be predetermined. When data representative of the traffic at a particular sensor **20** is received, the computer system **40** can easily display the traffic information for that particular location on the map by associating the geographic location of the sensor **20** with the longitude and latitude information contained in the map database. Similarly, where

traffic information is derived from individual mobile user stations **52** in vehicles **60** which report latitude and longitude derived from the mobile GPS receivers **62**, the computer system **40** can easily associate the traffic information received from the mobile user station **52** with the map database based on the user's reported latitude and longitude. Thus, by utilizing a map database that contains latitude and longitude information for various locations, the system can easily overlay traffic information on top 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 **201–218**. Along the road are positioned various sensors **20***a–***20***d* whose geographic locations have been determined. Traveling along the road are a variety of users **401–404** having respective user stations and GPS receivers. FIG. **12** illustrates one 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 (or road segments) **201–218** has an associated longitude and latitude. In addition, the database may optionally contain the associated road, as well as optionally the direction that traffic moves at that location (for example, using a 360 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 **20***a* may be used to provide the vehicle velocity for location **202**. User **401** may be used to provide the vehicle velocity at location **210**.

Of course, while a database has been illustrated that combines 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. An example of a map database useful with such a system is Etak Map® from SONY®. The map database could reside on either or both the computer system **40** or the mobile user station **52**.

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**.

The advantage of using a map database that contains longitude and latitude information associated with various locations on a map is that the system allows easy and automatic integration of traffic information, either to a database or for display. Thus, traffic information may be collected from an individual user who provides the longitude and latitude for that user based on information derived from the user's GPS receiver **62**. The computer system then matches the location of the user to the map database based on the received longitude and latitude information. The computer system **40** can then overlay the traffic information data received from the user onto the map database based upon the provided longitude and latitude information. Thus, the system allows traffic information to be updated for a map database, even though the routes of the individual users are not predetermined. In other words, it is not necessary to know the particular route of an individual user in order to collect useful traffic information and to update a traffic information database.

The traffic information database may be configured to provide traffic information to optimize the analysis of traffic information both by location and time. The spacing of the locations for which traffic information is associated may be either every half-mile, mile, etc. The spacing depends on the locations of ground based traffic monitors and the number of cars traveling through a particular spacing. If, for example, there are traffic monitors spaced every half-mile, then the traffic information database may report traffic information for each of those locations. However, for a section of road that does not have traffic monitors, the spacing of the locations associating traffic information depends on the frequency of vehicles passing along the highway and which are reporting traffic conditions. For example, where 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 ¼ mile. However, where the traffic density is low, there may be few vehicles from which to gather data, and thus the spacing may be large, such as 3 miles. The traffic information database may be configured so that the spacing is optimized based on the ability to collect data for different areas. Thus, for a section of freeway in a congested area, the spacing of locations for traffic information may be short, such as ¼ mile, while in outlying areas the spacing may be large, such as every three miles.

Similarly, the amount of time over which data is collected and averaged may be varied. Ideally, the traffic information presented represents traffic conditions at that 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 insure that the traffic information is truly representative of conditions at that location. Where 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, where traffic levels are light, data may be collected for a long period of time, such as fifteen minutes. 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.

By varying the spacing between locations for which data is associated 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 information is gathered only over a short time 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 for displaying traffic information to a commuter using a mobile user station **52**. These various alternatives allow the user to customize the display **54** to provide the desired information, and to minimize the amount of operation needed while driving. In one display embodiment, the display **54** centers the location of the user on the displayed

map, and is referred to herein as the "Centered Display." In the Centered Display, the mobile user station **52** determines the longitude and latitude of the commuter based on information obtained from the GPS receiver **62**. The mobile user station **52** then displays the position of the commuter at the center of the display **54** as shown in FIG. **13**. The traffic information and roadway data is then displayed around the commuter by comparing the longitude and latitude of the user with the longitude and latitude associated with the various map locations contained in the map database. The individual user may preselect the scale of the map which will be displayed based on the user's preference. For example, the user may wish to show an area of one mile radius centered around the user, or two mile radius, or so forth. As the user drives along a road and the user's geographic location changes, the user station **52** and/or computer system **40** adjusts the display **54** to reposition the map and traffic information on the display **54**. Thus, the map and traffic information scroll along the display **54** as the user moves along a road. For example, if the display **54** shows map and traffic information at a scale of one inch per mile and the direction north is shown at the top of the display, the map and traffic information would scroll down one inch as the user drives one mile north. The display **54** would continuously show the location of the user at the center of the display **54** even though the geographic location of the user changes.

A particular advantage of the Centered Display as discussed above is that the location of the user can immediately be ascertained from a quick glance at the display **54**, because the location of the user is always at the center of the display **54**. The user is not required to adjust the display **54** by inputting information to the user station **52** in order to constantly view the surrounding traffic information, even as the location of the user changes. Thus a commuter, by selecting the Centered Display, may view constantly updated traffic information for his location without requiring any input from the commuter.

Alternatively, the display may be preselected to show the location of the user at a different location on the display **54**, but that continues to show the geographic location of the user at a single location on the display **54**, even as the geographic location of the user changes. This is referred to as an "Offset Display." This is a variation of the "Centered Display," but allows the user to adjust the display **54** to show more information of interest to the user. For example, if the user is traveling north, and north is shown at the top of the display **54**, the user may choose to display his location near the bottom of the display (offset from the center) so as to display a greater amount of traffic information in the northern direction. Such a display is shown in FIG. **14**. Like the "Centered Display," as the geographic location of the user changes, the map and traffic information is automatically scrolled to show the surrounding road and traffic, while maintaining the location of the user on the display **54**. The "Offset Display" is particularly suited for driving along a relatively straight road, so that the user has relatively more upcoming traffic information displayed.

Yet another alternative display allows the user to display upcoming traffic information for the road on which the user is traveling, referred to herein as the "Look Ahead Display." In the Look Ahead Display, the display **54** displays the location of the user near an edge of the display **54** so as to maximize the amount of upcoming road and traffic information which is displayed. In the Look Ahead Display, the computer system **40** and/or the user station **52** determines the direction of the user based on data received from the GPS receiver **62** and compares that direction to the road the user is traveling on. The map and traffic information is then selected so as to maximize the amount of road shown ahead of the driver. The user may select to either display the map and traffic information so that the cardinal ordinates North, South, East and West remain fixed (for example North is always at the top of the display) or the road is generally centered (for example vertically on the display) without regard to the cardinal ordinates. For example, when the display maintains North at the top of the display, and the user is traveling south, the display **54** would display the location of the user near the top of the display **54**, so as to increase the amount of the road ahead of the user that is displayed. If the road then curved, so that the user was heading in an easterly direction, the display **54** would show the location of the user near the left hand side of the screen so as to display the road ahead to the east (east appearing on the right hand side of the screen). This is illustrated in FIG. **15**. By constantly comparing the direction of movement of the user, as determined from the data received from the GPS receiver **62**, with the road information contained in the map database, the system maximizes the amount of map and traffic information displayed based on the location and direction of travel of the user.

Yet another type of display is the "Stationary Display." In this type of display, the underlying map data remains "motionless" while the displayed location of the user changes according to the movement of the user. For example, initially, the user's geographic location on the map may be shown at the center of the screen. As the user moves along a road, the user's location would change on the display **54**, while the position of the road relative to the screen would remain constant. (An example of such a display is shown in FIG. **6**). If the user moved to a location not displayed, a new map would be displayed, showing the location of the user on the new map screen. The Stationary Display is useful where the map database is divided into discrete units that roughly correspond to "pages." The Stationary Display can show the map data corresponding to a particular page on the display **54**. New pages can be shown as the user's location changes. The Stationary Display may be preferred where the user is familiar with the surrounding area. The Stationary Display may also be less disconcerting to the user, because only a small portion of the screen is changing (the displayed location of the user) as the user's geographic location changes. The Stationary Display may also achieve some efficiencies for the system, because the computer system **40** would only be required to send enough data to fill display **54** to show the map for the area surrounding the location of the user and then update as necessary for new traffic information. Thus, the map database could be divided into discrete portions, each portion containing enough information to fill a display. In response to a request from a mobile user station **52** providing location information derived from the GPS receiver **62**, the computer system **40** identifies the corresponding portion of the map database to the user station **52**. The user station **52** may manage the task of integrating the map database with the user's location to display the geographic position of the user. New map data would only be sent if the user's geographic location changed enough so that a different portion of the map database corresponds to the new location.

Yet another mode for displaying map and traffic information is to display a particular area of interest (referred to as the "Area Display"). The Area Display displays a particular geographic area of interest to the commuter. The location of the commuter may or may not be displayed, depending on

whether the commuter is located within the area. To receive an Area Display, the mobile user station **52** transmits the location of the area of interest, and in response, the computer system **40** provides pertinent map and/or traffic information. The Area Display may be especially advantageous where the commuter wishes to view a particular area of interest that may be some distance away from the commuter.

Typically the maps may be displayed with different amounts of detail, freeways, highways, parks, arterials, side streets, etc., which may be selected by the user. The amount of road detail provided for a particular region may be associated with the map provided and the technique of presentation to provide additional ease of use.

Various alternatives may be used to command the user station **52** and/or computer system **40** to display map and traffic information. In one embodiment, where the network is the Internet, the system may provide a settings preference web page to the user to allow the user to select the user's individual display settings. Thus, the user may select the scale of the display (i.e. one inch of display equals one geographic mile); the size of the display (to accommodate different screen sizes); the frequency at which the map and traffic information is updated; the particular default display type (such as the "Centered Display," "Look Ahead Display," "Stationary Display," "Area Display," or other type); and whether information banners are to be displayed. The ability to choose the frequency with which traffic information may be updated may be useful to allow the user to control the cost of providing the information to the user. For example, where the cost of being connected to the network is high, the user may wish to receive only short periodic updates (such as an update every five minutes) to reduce the expense of receiving data.

The user may also set the time duration for which the traffic information is displayed to the user. The user may choose, for example, to alternate between the traffic information web site, and another web site. Thus, the computer system **40** may transmit traffic information for 30 seconds, and then may transmit information such as stock quotes from another web site for 30 seconds.

In addition to default settings, or settings that are preset by the user, the user station **52** may be capable of receiving input from the user to actively change how information is displayed in response to user commands. In one embodiment, the user station **52** includes a microphone **53** and voice recognition software to allow the user station **52** to respond to the voice commands of the user. (See FIG. **16**). Thus, the user may by using verbal commands select a particular mode of display, request an update of the traffic information, or change the scale of the map. Alternatively, the user station **52** may have a keyboard to accept input commands via the keyboard. Alternatively, the user station may have only a control panel **55** having several key pads **57** which correspond to particular types of preset commands. For example, one key pad may allow a user to request traffic information. Another key pad may allow a user to zoom in on the map (i.e. change scale to show more detail), while another key pad would cause the display to zoom out (i.e. change scale to show more area). Another key pad may select for the Stationary Display, while yet another may select for the Look Ahead Display. The user station **52** may allow the user to preset the key pads **57**, such as via a web page preferences page, so that the key pads correspond to the user's particular preferences. The use of key pads to select the mode in which information is displayed has several advantages. The key pads eliminate fumbling by the commuter, and thus are safer to use than a keyboard. They keypads also allow the user to quickly move between different types of modes of presentation, so that the commuter may maximize the amount of information received.

When using data from individual mobile user stations **52** to determine traffic information, it may be desirable to screen the data to determine whether it will be included in the traffic information database. One type of screening may involve comparing the geographic location of the user with particular features stored in the map database. For example, where the user is located at a stop sign, it may not be desirable to include the user's reported velocity in the database. The computer system **40** may be programmed so that data received from users at stop signs will not be added to the traffic database. Accordingly, when the user reports its geographic location, the computer system **40** compares the geographic location of the user with the map database. When the computer system **40** determines that the user is located at a stop sign (or other location, as desired), the data is rejected. Thus, the vehicle speed data transmitted by the user is screened based on the particular location of the user.

It may also be desirable to screen out data from users that are not traveling along roads of interest. For example, the computer system **40** may maintain a limited traffic information database that only stores traffic information for selected major roads. Thus, the traffic information database may contain data for fewer roads than contained in the map database. If a user is traveling along a side street which is not included in the traffic information database, the data received from the user is rejected or otherwise not used. Thus, the computer system **40** compares the geographic location of the user with the geographic locations of the roads maintained in the traffic information database. If the user reports a location that is not on a road for which traffic information is maintained in the traffic information database, the user's particular traffic information is rejected.

Another type of screening that may be desired is to compare the direction of travel of each user with the direction of travel on various roads before adding the user's vehicle speed to the traffic information database. This may be particularly important where the resolution of the GPS receiver **62** is such that the location of the user may be confused with one or more roads. For example, a user may be traveling along a divided road with lanes of traffic traveling in opposite directions, but the resolution of the GPS receiver **62** does not allow the computer system **40** to determine with confidence in which lane the user's vehicle is traveling. In order to determine what portion of the traffic information database to update, the computer system **40** and/or user station **52** creates a directional vector associated with the user which represents the user's direction of travel. The directional vector is determined based on the movement over time by the user. For example, the directional vector may be represented by a number ranging from 0–359; with 0° representing travel straight north, 90° straight east, etc. When information is received by the computer system **40**, it compares the directions of travel of the various roads near the geographic location of the user with the user's directional vector. For example, the geographic information reported by the GPS receiver **62** indicates that the user is located near a particular road that has north/south lanes with traffic traveling in each direction. The user's directional vector indicates that the user is traveling south. The computer system **40** therefore updates the traffic information database to add the data received from the user to the traffic information database for the lanes of traffic moving in the user's direction of travel. Other instances in which the directional vector would be useful would be where a user is

crossing a particular road, such as when traveling along an overpass or an underpass, and the resolution of the GPS receiver is such that the computer system **40** is unable to determine with confidence on which road the user is traveling. The use of the directional vector thus prevents the computer system **40** from incorrectly updating the traffic information database. In addition, the altitude component of the GPS data may be used to discriminate between users on overpasses or roads that are vertically offset from one another.

Yet another type of screening may be necessary where the user reports no movement. In this instance, it may be desirable to determine whether the user's data should be added to the database, because the user may be stopped along the side of the road while traffic is nevertheless moving. Thus, the computer system **40**, when it receives data from a user indicating that the user has not moved since the last time the user reported data, may cross check the data through a variety of algorithms. For example, the computer system **40** may compare the data reported by the user with the traffic information for that portion of the road determined from data taken from sensors and/or other mobile users. If the traffic information derived from other sources indicates that traffic is moving along the road, the no movement data received from the particular user would be rejected. Alternatively, the computer system **40** may be associated with a system that allows a user to request assistance in the event of a breakdown. The computer system **40** could check to see whether the user has reported a breakdown, and if so, reject the traffic data.

Yet another method for filtering data is to screen data received from particular users and/or classes of devices which are capable of functioning as user stations. For example, it may be desirable to exclude traffic data received from buses, because buses do not provide representative velocity data due to frequent stops. Thus all data from buses could be excluded. Alternatively, data from particular types of user stations could be excluded. For example, the computer system **40** could maintain a database of the particular types of devices used by different users. Because data from hand held devices may not correspond to a vehicle moving along a road, the computer system **40** may reject data from the class of hand held computing devices. Thus the system could distinguish between different classes of users and/or user stations **52** to determine whether to accept traffic data from that user station.

In another embodiment, the present inventors came to the realization that merely encoding the image with a representation of the traffic flow relative to a single fixed value is not optimal. An example of such coding would be red is 0–30 mph, yellow is 30–40 mph, and green is 40+ mph. This coding is adequate for freeways but when roads are encoded that have lower speed limits, the encoding should be relative to what the speed limit is so that the user knows the relative speed of traffic on the road. Thus coding may correspond to relative speed rather than absolute speed. For example, a freeway with speed limit 55 mph would be coded 0–30 mph red, 30–40 mph yellow and 40+ mph green, while a side road with a 35 mph speed limit would be coded 0–20 mph red, 20–25 mph yellow and 25+ mph green. This permits relative encoding which is easier to interpret. Alternatively, encoding may be based on other relative measures, such as for example, anticipated traffic flow for that particular road, section of road, time of day, and statistical history measure of traffic in the past. When multiple freeways in the area are all busy, such as Seattle, coding for absolute values may show everything as red. However, if relative coding is used, the traffic flow may be relative to other roads so that the encoding dynamically adjusts to encode one road relative to one or more other roads. In this manner, for example, the "fast" road may be green and the "slow" road may be red.

While the present invention has been described in the context of providing traffic information, the present invention may also be used to provide location specific information to mobile users. In one such embodiment, an information database may be created for weather reports, in which various weather reports are associated with respective geographic locations. A user in a vehicle **60** may request a weather report from the mobile user station **52**. The request would include the user's geographic location as determined by the GPS receiver **62**. In response to the request, the computer system would access the weather database and select the weather report associated with that geographic location. The location specific weather report would then be transmitted to the mobile user station **52**. The weather report would then be displayed or otherwise communicated to the user through speakers. Other similar information databases could likewise be prepared to associate particular information with geographic locations. In this manner, a user at a mobile user station **52** may easily obtain highly relevant information that is specific to the location of the user. In preferred embodiments of the system, the user may receive both traffic information and other location specific information at the same time, in sequence, or as requested by the user. In one such embodiment, the user may preselect the information to be retrieved and the sequence of display or communication.

The terms and expressions which have been employed in the foregoing specification are used therein as terms of description and not of limitation, and there is no intention, in the use of such terms and expressions, of excluding equivalents of the features shown and described or portions thereof, it being recognized that the scope of the invention is defined and limited only by the claims which follow.

What is claimed is:

1. 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 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 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 traffic information together with a signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations and providing to said one of said mobile user stations information representative of selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations; and

(e) said one of said mobile user stations displaying graphically on said display information representative of selected portions of said traffic information database.

2. The system of claim 1 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

3. The system of claim 2 wherein said computer system compares data from said mobile user stations with said data derived from said traffic monitors before updating said traffic information database.

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

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

6. The system of claim 5 wherein said mobile user station displays a selected portion of said map database.

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

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

9. The system of claim 1 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic conditions.

10. The system of claim 1 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said respective geographic location of said one of said mobile user stations with said map database before updating said traffic information database.

11. 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 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 signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations; and

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

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

13. The system of claim 11 wherein said computer system provides to said one of said mobile user stations information representative of selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations.

14. The system of claim 11 wherein said mobile user station comprises a display, and said one of said mobile user stations displays graphically on said display information representative of selected portions of said traffic information database.

15. The system of claim 11 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

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

17. The system of claim 16 wherein said mobile user station displays a selected portion of said map database and a selected portion of said traffic information database.

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

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

20. The system of claim 11 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic conditions.

21. 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile 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.

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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein less than all available traffic information is displayed by said display.

23. 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein the displayed traffic information geographically encompasses the current geographic position of said mobile user station.

* * * * *

SPE RESPONSE FOR CERTIFICATE OF CORRECTION

Paper No.: _____

DATE : 7-30-05

TO SPE OF : ART UNIT 3661

SUBJECT : Request for Certificate of Correction on Patent No.: 6785606

A response is requested with respect to the accompanying request for a certificate of correction.

Please complete this form and return with file, within 7 days to:
Palm location **7580, Certificates of Correction Branch – South Tower – 9A22**
If response is for an IFW, **return to employee (named below) via PUBSCofC Team in MADRAS.**
With respect to the change(s) requested, correcting Office and/or Applicant's errors, should the patent read as shown in the certificate of correction (COCIN)? No new matter should be introduced, nor should the scope or meaning of the claims be changed.

Valerie Jackson

Thank You For Your Assistance

Certificates of Correction Branch
Tel. No. 703-308-9390 ext. 114

The request for issuing the above-identified correction(s) is hereby:
Note your decision on the appropriate box.

☐ **Approved**	**All** changes apply.
☐ **Approved in Part**	Specify below which changes **do not** apply.
☐ **Denied**	State the reasons for denial below.

Comments:

_____

_____

_____

_____

_____

_____ _____
SPE **Art Unit**

PTOL-306 (REV. 7/03) U.S. DEPARTMENT OF COMMERCE Patent and Trademark Office

A000299

OIPE
JUL 08 2005
PATENT & TRADEMARK OFFICE

Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Patent Number	6,785,606 B2
Issue Date	August 31, 2004
First Named Inventor	Bruce W. DeKock et al.
Art Unit	
Examiner Name	
Attorney Docket Number	7116.0006

ENCLOSURES ***(check all that apply)***

- ☐ Fee Transmittal Form
- ☒ Fee Attached
- ☐ Amendment / Reply
- ☐ After Final
- ☐ Affidavits/declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☐ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Reply to Missing Parts/ Incomplete Application
- ☐ Reply to Missing Parts under 37 CFR1.52 or 1.53
- ☐ Drawing(s)
- ☐ Licensing-related Papers
- ☐ Petition
- ☐ Petition to Convert to a Provisional Application
- ☐ Power of Attorney, Revocation Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Request for Refund
- ☐ CD, Number of CD(s) ____
- ☐ Landscape Table on CD
- ☐ After Allowance Communication to TC
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Other Enclosure(s) *(please identify below)*:

Certificate of Correction, in duplicate
Check in the amount of $100

Remarks

The Commissioner is hereby authorized to charge any additional fees, or credit any overpayment, to Deposit Account No. 03-1550.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm	Chernoff, Vilhauer, McClung & Stenzel		
Signature			
Printed Name	Kevin L. Russell		
Date	July 6, 2005	Reg. No.	38,292

Certificate of Correction

JUL 13 2005

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Signature			
Typed or printed name	Kevin L. Russell	Date	July 6, 2005

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

07/11/2005 AADOF01 00000003 6785606
01 FC:1811 100.00 OP

JUL 14 2005

PTO/SB/44 (04-04)
Approved for use through 04/30/2007. OMB 0651-0033
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.
(Also Form PTO-1050)

UNITED STATES PATENT AND TRADEMARK OFFICE

CERTIFICATE OF CORRECTION

PATENT NO : 6,785,606 B2

DATED : Aug. 31, 2004

INVENTOR(S) : Bruce W. DeKock et al.

It is certified that error appears in the above-identified patent and that said Letters Patent are hereby corrected as shown below:

On the cover page, please replace the "Related U.S. Application Data" (paragraph (63)) with the following:

--Continuation of application No. 10/218,850, filed on Aug. 13, 2002, now Pat. No. 6,574,548, which is a continuation of application No. 09/550,476, filed on Apr. 14, 2000, now Pat. No. 6,466,862.--

MAILING ADDRESS OF SENDER: Kevin L. Russell
Chernoff, Vilhauer, McClung & Stenzel
1600 ODS Tower
601 SW Second Avenue
Portland, OR 97204

PATENT NO. 6,785,606 B2

No. of additional copies

This collection of information is required by 37 CFR 1.322, 1.323, and 1.324. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1.0 hour to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Attention Certificate of Corrections Branch, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

JUL 14 2005

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
or Fax (703) 746-4000

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

00152 7590 06/17/2004

CHERNOFF, VILHAUER, MCCLUNG & STENZEL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OR 97204-3157

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission
I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

Kevin L. Russell (Depositor's name)
(Signature)
June 24 2004 (Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/367,162	02/13/2003	Bruce W. DeKock	7116.0006	3015

TITLE OF INVENTION: SYSTEM FOR PROVIDING TRAFFIC INFORMATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$665	$300	$965	09/17/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
MARC COLEMAN, MARTHE Y	3661	701-117000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 CHERNOFF, VILHAUER,
2 McCLUNG, & STENZEL, LLP
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); ☐ individual ☐ corporation or other private group entity ☐ government

4a. The following fee(s) are enclosed:

☒ Issue Fee
☒ Publication Fee
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

☒ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☒ The Director is hereby authorized by charge to the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form). ANY ADDITIONAL

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) (Date) June 24 2004

NOTE; The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

07/01/2004 HDEMESS2 00000050 10367162
01 FC:2501 665.00 OP
02 FC:1504 300.00 OP

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)

JUN 30 2004
PATENT & TRADEMARK OFFICE

PTO/SB/21 (02-04)
Approved for use through 07/31/2006. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/367,162
Filing Date	February 13, 2003
First Named Inventor	DeKock, et. al.
Art Unit	3661
Examiner Name	Marc Coleman, Marthe Y.
Attorney Docket Number	7116.0006

Total Number of Pages in This Submission: 7

ENCLOSURES *(Check all that apply)*

- [x] Fee Transmittal Form
  - [x] Fee Attached
- [ ] Amendment/Reply
  - [ ] After Final
  - [ ] Affidavits/declaration(s)
- [ ] Extension of Time Request
- [ ] Express Abandonment Request
- [ ] Information Disclosure Statement
- [ ] Certified Copy of Priority Document(s)
- [ ] Response to Missing Parts/ Incomplete Application
  - [ ] Response to Missing Parts under 37 CFR 1.52 or 1.53
- [ ] Drawing(s)
- [ ] Licensing-related Papers
- [ ] Petition
- [ ] Petition to Convert to a Provisional Application
- [ ] Power of Attorney, Revocation Change of Correspondence Address
- [ ] Terminal Disclaimer
- [ ] Request for Refund
- [ ] CD, Number of CD(s) _____
- [ ] After Allowance communication to Technology Center (TC)
- [ ] Appeal Communication to Board of Appeals and Interferences
- [ ] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
- [ ] Proprietary Information
- [ ] Status Letter
- [x] Other Enclosure(s) (please Identify below):

Issue Fee Transmittal; postcard

Remarks

Commissioner authorized to charge additional fees or credit overpayment to Deposit acct. 03-1550.

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Kevin L. Russell, Reg. No. 38,292
Signature	
Date	May 24 2004

CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Kevin L. Russell, Reg. No. 38,292		
Signature		Date	June 24 2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

JUN 30 2004
PATENT & TRADEMARK OFFICE

PTO/SB/17 (10-03)
Approved for use through 07/31/2006. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☑ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 965.00

Complete if Known	
Application Number	10/367,162
Filing Date	Feb. 12, 2003
First Named Inventor	Baoxin Li, et. al.
Examiner Name	Marc Coleman, Marthe Y.
Art Unit	3661
Attorney Docket No.	7116.0006

METHOD OF PAYMENT *(check all that apply)*

☑ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account:

Deposit Account Number: 03-1550

Deposit Account Name: Chernoff Vilhauer, et. al

The Director is authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☑ Credit any overpayments

☑ Charge any additional fee(s) or any underpayment of fee(s)

☐ Charge fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	

SUBTOTAL (1) ($)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims		Fee from below	Fee Paid
Total Claims		-20** =	X	=
Independent Claims		- 3** =	X	=
Multiple Dependent				=

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	** Reissue independent claims over original patent
1205	18	2205	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge - late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for *ex parte* reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1,840*	1805	1,840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1,005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	665.00
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	770	2809	385	Filing a submission after final rejection (37 CFR 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	

Other fee (specify) publication fee 300.00

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) ($) 965.00

SUBMITTED BY					
Name (Print/Type)	Kevin L. Russell	*Registration No. (Attorney/Agent)*	38,292	*Telephone*	503 227-5631
Signature				*Date*	June 29 2004

(Complete *(if applicable)*)

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

This collection of information is required by 37 CFR 1.17 and 1.27. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

NOTICE OF ALLOWANCE AND FEE(S) DUE

00152 7590 06/17/2004

CHERNOFF, VILHAUER, MCCLUNG & STENZEL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OR 97204-3157

EXAMINER	
MARC COLEMAN, MARTHE Y	
ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 06/17/2004

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/367,162	02/13/2003	Bruce W. DeKock	7116.0006	3015

TITLE OF INVENTION: SYSTEM FOR PROVIDING TRAFFIC INFORMATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$665	$300	$965	09/17/2004

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.

B. If the status is changed, pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above and notify the United States Patent and Trademark Office of the change in status, or

If the SMALL ENTITY is shown as NO:

A. Pay TOTAL FEE(S) DUE shown above, or

B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check the box below and enclose the PUBLICATION FEE and 1/2 the ISSUE FEE shown above.

☐ Applicant claims SMALL ENTITY status. See 37 CFR 1.27.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on r after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility t ensure timely payment f maintenance fees when due.

PTOL-85 (Rev. 11/03) Approved for use through 04/30/2004.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: Mail **Mail Stop ISSUE FEE**
Commissioner for Patents
P.O. B x 1450
Alexandria, Virginia 22313-1450

or Fax **(703) 746-4000**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 4 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Legibly mark-up with any corrections or use Block 1)

00152 7590 06/17/2004

CHERNOFF, VILHAUER, MCCLUNG & STENZEL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OR 97204-3157

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/367,162	02/13/2003	Bruce W. DeKock	7116.0006	3015

TITLE OF INVENTION: SYSTEM FOR PROVIDING TRAFFIC INFORMATION

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	YES	$665	$300	$965	09/17/2004

EXAMINER	ART UNIT	CLASS-SUBCLASS
MARC COLEMAN, MARTHE Y	3661	701-117000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

❑ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

❑ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 _____

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. Inclusion of assignee data is only appropriate when an assignment has been previously submitted to the USPTO or is being submitted under separate cover. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE (B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent); ❑ individual ❑ corporation or other private group entity ❑ government

4a. The following fee(s) are enclosed:

❑ Issue Fee

❑ Publication Fee

❑ Advance Order - # of Copies _____

4b. Payment of Fee(s):

❑ A check in the amount of the fee(s) is enclosed.

❑ Payment by credit card. Form PTO-2038 is attached.

❑ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

Director for Patents is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above.

(Authorized Signature) (Date)

NOTE; The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

TRANSMIT THIS FORM WITH FEE(S)

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/367,162	02/13/2003	Bruce W. DeKock	7116.0006	3015

00152 7590 06/17/2004

CHERNOFF, VILHAUER, MCCLUNG & STENZEL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OR 97204-3157

EXAMINER	
MARC COLEMAN, MARTHE Y	
ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 06/17/2004

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b)
(application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 0 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 0 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) system (http://pair.uspto.gov).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

PTOL-85 (Rev. 11/03) Approved for use through 04/30/2004.

Notice of Allowability	Applicati n No.	Applicant(s)	
	10/367,162	DEKOCK ET AL.	
	Examiner	Art Unit	
	Marthe Y Marc-Coleman	3661	MW

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *3/31/04*.
2. ☒ The allowed claim(s) is/are *39-61*.
3. ☒ The drawings filed on *13 February 2004* are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.
5. ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
   (a) ☐ The translation of the foreign language provisional application has been received.
6. ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application. **THIS THREE-MONTH PERIOD IS NOT EXTENDABLE**

7. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

8. ☐ CORRECTED DRAWINGS must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No. ____.
   (b) ☐ including changes required by the proposed drawing correction filed _____, which has been approved by the Examiner.
   (c) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No. _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the top margin (not the back) of each sheet. The drawings should be filed as a separate paper with a transmittal letter addressed to the Official Draftsperson.

9. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1☐ Notice of References Cited (PTO-892)
2☐ Notice of Informal Patent Application (PTO-152)
3☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
4☐ Interview Summary (PTO-413), Paper No.____ .
5☐ Information Disclosure Statements (PTO-1449), Paper No. ____.
6☐ Examiner's Amendment/Comment
7☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
8☒ Examiner's Statement of Reasons for Allowance
9☐ Other .

Marthe Y. Marc-Coleman

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance:

In light of the terminal disclaimer, claims 39-61 are found to be allowable.

2. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marthe Y Marc-Coleman whose telephone number is (703) 305-4970. The examiner can normally be reached on Monday-Thursday from 9:30 AM - 8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tomas G Black can be reached on (703) 305-8233. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1113.

Patent Examiner
Marthe Y. Marc-Coleman
Marthe Marc-Coleman

May 25, 2004

Issue Classification	Application No.	Applicant(s)	
	10/367,162	DEKOCK ET AL.	
	Examin r	Art Unit	
	Marthe Y Marc-Coleman	3661	

ISSUE CLASSIFICATION

ORIGINAL		CROSS REFERENCE(S)							
CLASS	SUBCLASS	CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)						
701	117	701	118						
INTERNATIONAL CLASSIFICATION									
G 01S	5/00								
	/								
	/								
	/								
	/								

(Assistant Examiner) (Date)

(Legal Instruments Examiner) (Date)

Marthe Y. Marc-Coleman
Marthe Y. Marc-Coleman 5/25/04
(Primary Examiner) (Date)

Total Claims Allowed: 23

O.G. Print Claim(s)	O.G. Print Fig.
39	1

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47

Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
	1		31	23	61		91		121		151		181		
	2		32		62		92		122		152		182		
	3		33		63		93		123		153		183		
	4		34		64		94		124		154		184		
	5		35		65		95		125		155		185		
	6		36		66		96		126		156		186		
	7		37		67		97		127		157		187		
	8		38		68		98		128		158		188		
	9	1	39		69		99		129		159		189		
	10	2	40		70		100		130		160		190		
	11	3	41		71		101		131		161		191		
	12	4	42		72		102		132		162		192		
	13	5	43		73		103		133		163		193		
	14	6	44		74		104		134		164		194		
	15	7	45		75		105		135		165		195		
	16	8	46		76		106		136		166		196		
	17	9	47		77		107		137		167		197		
	18	10	48		78		108		138		168		198		
	19	11	49		79		109		139		169		199		
	20	12	50		80		110		140		170		200		
	21	13	51		81		111		141		171		201		
	22	14	52		82		112		142		172		202		
	23	15	53		83		113		143		173		203		
	24	16	54		84		114		144		174		204		
	25	17	55		85		115		145		175		205		
	26	18	56		86		116		146		176		206		
	27	19	57		87		117		147		177		207		
	28	20	58		88		118		148		178		208		
	29	21	59		89		119		149		179		209		
	30	22	60		90		120		150		180		210		

Search Not s	Applicati n N .	Applicant(s)	
	10/367,162	DEKOCK ET AL.	
	Examiner	Art Unit	
	Marthe Y Marc-Coleman	3661	

SEARCHED			
Class	Subclass	Date	Examiner
701	119	5/25/2004	MYM
701	208	5/25/2004	MYM
701	201	5/25/2004	MYM
701	210	5/25/2004	MYM
701	219	5/25/2004	MYM
701	117	5/25/2004	MYM
701	118	5/25/2004	MYM
340	995.13	5/25/2004	MYM
349	207.1	5/25/2004	MYM

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner
701	**117**	5/25/2004	**MYM**
701	118	5/25/2004	MYM

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
West Text Search Note: Because of priority claimed, no prior art prior to the priority date was found.	5/25/2004	MYM

Application Number	Application No.	Applicant(s)	
	10/367,162	DEKOCK ET AL.	

TERMINAL DISCLAIMER	☒ APPROVED	☐ DISAPPROVED
Document Code - DISQ	This patent is subject to a Terminal Disclaimer	
INTERNAL DOCUMENT – DO NOT MAIL		

U.S. Patent and Trademark Office

WEST Search History

Hide Items | Restore | Clear | Cancel

DATE: Tuesday, May 25, 2004

Hide?	Set Name	Query	Hit Count
		DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=YES; OP=ADJ	
☐	L12	(20030156208 or 20030055553 or 6707421 6664924 or 6515595 or 6304753 or 6236933).pn.	10
☐	L11	20030156208 20030055553 6707421 6664924 6515595 6304753 6236933	0
☐	L10	l8 and L9	292
☐	L9	display$3 same traffic same (information or data)	9190
☐	L8	l5 and l6 and L7	1408
☐	L7	(receiv$3 or obtain$3) same traffic same (information or data)	33463
☐	L6	(transmit$4 or send$3 or sent) same traffic same (information or data)	34296
☐	L5	l2 and L4	2067
☐	L4	request same traffic same (information) same (base station or center or provider or network)	3573
☐	L3	request sametraffic same (information) same (base station or center or provider or network)	0
☐	L2	traffic same (information or data) same (mobile user$1 or user$1 or driver$1 or vehicle$1 or pda or personal digital assistant or cell phone or portable comput$3 or laptop or mobile device or mobile unit)	27290
☐	L1	traffic same (information or data)	75554

END OF SEARCH HISTORY

h e b b cg b chh e f c e c c e

OIPE
MAR 31 2004

Appl. No.	:	10/367,162
Applicant	:	Bruce W. DeKock
Filed	:	February 13, 2003
Title	:	SYSTEM FOR PROVIDING TRAFFIC INFORMATION
TC/A.U.	:	3015
Examiner	:	Marc Coleman
Docket No.	:	7116.0006

Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

AMENDMENT

Sir:

In response to the outstanding Office Action dated March 25, 2004, please amend the above-identified application to include the enclosed Terminal Disclaimer along with required fees, and these remarks:

Amendments to the Specification are not reflected in this paper.

Amendments to the Claims begin on page 2 of this paper.

Amendments to the Drawings are not reflected in this paper.

Remarks/Arguments begin on page 10 of this paper, and page 11 is a Terminal Disclaimer.

An **Appendix** is not included in this paper.

AMENDMENTS TO THE CLAIMS

This set of claims will replace all previous sets of claims for this application.

Claims 1-38 (canceled).

39 (original). 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 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 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 traffic information together with a signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations and providing to said one of said mobile user stations information representative of selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations; and

(e) said one of said mobile user stations displaying graphically on said display information representative of selected portions of said traffic information

database.

40 (original). The system of claim 39 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

41 (original). The system of claim 40 wherein said computer system compares data from said mobile user stations with said data derived from said traffic monitors before updating said traffic information database.

42. (original). The system of claim 39 wherein said at least one of said mobile user stations is a cellular phone.

43 (original). The system of claim 39 wherein said mobile user station further comprises a memory capable of storing a map database.

44 (original). The system of claim 43 wherein said mobile user station displays a selected portion of said map database.

45 (original). The system of claim 39 wherein each said mobile user station provides longitude and latitude information to said computer system.

46 (original). The system of claim 39 wherein said location of said one of said mobile user stations is displayed graphically.

47 (original). The system of claim 39 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic

conditions.

48 (original). The system of claim 39 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said respective geographic location of said one of said mobile user stations with said map database before updating said traffic information database.

49 (original). 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 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 signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations; and

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

50 (original). The system of claim 49 wherein said at least one of said mobile user stations is a cellular phone.

51 (original). The system of claim 49 wherein said computer system provides to said one of said mobile user stations information representative of selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations.

52 (original). The system of claim 49 wherein said mobile user station comprises a display, and said one of said mobile user stations displays graphically on said display information representative of selected portions of said traffic information database.

53 (original). The system of claim 49 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

54 (original). The system of claim 49 wherein said mobile user station further comprises a memory capable of storing a map database.

55 (original). The system of claim 54 wherein said mobile user station displays a selected portion of said map database and a selected portion of said traffic information database.

56 (original). The system of claim 49 wherein each said mobile user station provides longitude and latitude information to said computer system.

57 (original). The system of claim 49 wherein said location of said one of said mobile user stations is displayed graphically.

58 (original). The system of claim 49 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic conditions.

59 (original). 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile 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.

60. (original). 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein less than all available traffic information is displayed by said display.

61. (original). 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein the displayed traffic information geographically encompasses the current geographic position of said mobile user station.

REMARKS / ARGUMENTS

In order to overcome the nonstatutory double patenting rejection based on a judicially created doctrine grounded in public policy so as to prevent the unjustified or improper timewise extension of the 'right to exclude" granted by a patent, and to prevent possible harassment by multiple assignees, we include herewith a terminal disclaimer in compliance with 37 CFR 1.321(c).

If the Examiner believes that for any reason direct contact with applicant's attorney would advance the prosecution of this application, the Examiner is invited to telephone the undersigned at the number below.

Respectfully submitted,
Chernoff, Vilhauer, McClung & Stenzel, LLP
1600 ODS Tower
601 SW Second Avenue
Portland, Oregon 97204

By: _____

Kevin L. Russell
Reg. No. 38,292
Telephone No. (503) 227-5631
FAX No. (503) 228-4373

OIPE
MAR 31 2004
PATENT

TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A PRIOR PATENT	Docket Number 7116.0006

In re Application of : Bruce W. DeKock

Application No.: 10/367,162

Filed: February 13, 2003

For: SYSTEM FOR PROVIDING TRAFFIC INFORMATION

The owner, Bruce W. DeKock, of 100 percent interest in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application, which would extend beyond the expiration date of the full statutory term defined in 35 U.S.C. 154 to 156 and 173 as presently shortened by any terminal disclaimer, of prior US Patent No. 6,574,548. The owner hereby agrees that any patent so granted on the instant patent application shall be enforceable only for and during such period that it and the prior patent granted are commonly owned. This agreement runs with any patent granted on the instant application and is binding on the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term as defined in 35 U.S.C. 154 to 156 and 173 of the prior patent, as presently shortened by any terminal disclaimer; in the event that it: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 C.F.R. 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.

Check either box 1 or 2 below, if appropriate.

1. ☐ For submissions on behalf of an organization (e.g., corporation, partnership, university, government agency, etc.), the undersigned is empowered to act on behalf of the organization.

I hereby declared that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

2. ☒ The undersigned is an attorney or agent of record.

04/01/2004 FHETEKI1 00000074 031550 10367162
01 FC:2814 55.00 DA

Signature	March 29, 2004
Kevin L. Russell	38,292
Typed or Printed Name	Registration No.

☒ Terminal disclaimer fee under 37 C.F.R. 1.20(d) is included.

* Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner). Form PTO/SB/96 may be used for this statement. See MPEP § 324.

MAR 31 2004 PATENT & TRADEMARK

FEE TRANSMITTAL for FY 2004

Effective 10/1/ 2003. Patent fees are subject to annual revision.

	Complete If Known
Application Number	10/367,162
Filing Date	February 13, 2003
First Named Inventor	Bruce W. DeKock
Examiner Name	Marc Coleman
Art Unit	3661
Attorney Docket No.	7116.0006

☒ Applicant claims small entity status. See 37CFR 1.27

TOTAL AMOUNT OF PAYMENT $55

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☒ Other ☐ None

☒ Deposit Account

Deposit Account Number: 03-1550

Deposit Account Name: Chernoff Vilhauer McClung & Stenzel

The Commissioner is authorized to:(check all that apply)

☒ Charge fees indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) during the pendency of this application

☐ Charge any fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Code	Large Entity ($)	Small Entity Code	Small Entity ($)	Fee Description	Fee Paid
1001	770	2001	385	Utility filing fee	
1002	340	2002	170	Design filing fee	
1003	530	2003	265	Plant filing fee	
1004	770	2004	385	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
				SUBTOTAL (1)	$0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below		Fee Paid
Total Claims		- 20	**= 0	x	9	=	0
Indep. Claims		- 3	**= 0	x	43	=	0
Multiple Dependent						=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	86	2201	43	Independent claims in excess of 3
1203	290	2203	145	Multiple dependent claim, if not paid
1204	86	2204	43	**Reissue independent claims over original patent
1205	18	2205	9	*Reissue claims in excess of 20 and over original patent
				SUBTOTAL (2) $0

***or number of previously paid, if greater. For reissues, see above.*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge-late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex-parte reexamination	
1804	920	1804	920	Requesting publication of SIR prior to Examiner action	
1805	1,840	1805	1,840	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	420	2252	210	Extension for reply within second month	
1253	950	2253	475	Extension for reply within third month	
1254	1,480	2254	740	Extension for reply within fourth month	
1255	2,010	2255	1005	Extension for reply within fifth month	
1401	330	2401	165	Notice of Appeal	
1402	330	2402	165	Filing a brief in support of an appeal	
1403	290	2403	145	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,330	2453	665	Petition to revive - unintentional	
1501	1,330	2501	665	Utility issue fee (or reissue)	
1502	480	2502	240	Design issue fee	
1503	640	2503	320	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt.	
8021	40	8021	40	Recording each patent assignment per property (times no. of properties) - total assignments 1	
1809		2809		Filing a submission after final rejection (37 C.F.R. 1.129(a))	
1810	770	2810	385	For each additional invention to be examined (37 CFR 1.129(b))	
1801	770	2801	385	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify)				Terminal Disclaimer	55

* Reduced by Basic Filing Fee Paid **SUBTOTAL (3)** $55

SUBMITTED BY				Complete (if applicable)	
Name (print type)	Kevin L. Russell	Registration No.	38,292	*Telephone*	(503) 227-5631
Signature				*Date*	March 29, 2004

WARNING: Information on this form may become public. Credit card information should not be included on this form. Provide credit card information and authorization on PTO-2038.

SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450

MAR 31 2004
PATENT & TRADEMARK OFFICE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

		Application Number	10/367,162
		Filing Date	February 13, 2003
		First Named Inventor	Bruce W. DeKock
		Group Art Unit	3661
		Examiner Name	Marc Coleman
Total Number of Pages in this Submission	6	Attorney Docket Number	7116.0006

ENCLOSURES (check all that apply)

☒ Fee transmittal ☐ Fee attached form	☐ Assignment Papers (for an application)	☐ After Allowance Communication to Group
☒ Amendment ☐ After Final/ Response	☐ Drawing(s)	☐ Appeal Communication to Board of Appeals and Interferences
☐ Affidavits/Declaration(s)	☐ Licensing Related Papers	☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
☐ Extension of Time Request	☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition	☐ Proprietary Information
☐ Express Abandonment Request	☐ Petition to Convert to a Provisional Application	☐ Status Letter
☐ Information Disclosure Statement	☐ Power of Attorney, Revocation, Change of Correspondence Address	☒ Additional Enclosures (identify below)
☐ Certified copy of Priority Documents	☐ Terminal Disclaimer	Terminal Disclaimer, and an Acknowledgment Postcard
☐ Response to Missing Parts/ Incomplete Application	☐ Small Entity Statement	
☐ Response to Missing Parts Under 37 CFR 1.52 or 1.53	☐ Request for Refund	
	Remarks:	

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT

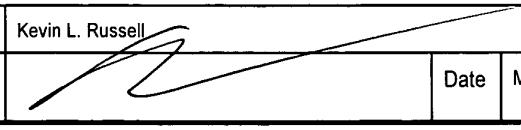
Firm or Individual Name	Kevin L. Russell of Chernoff Vilhauer Mc Clung & Stenzel, LLP
Signature	
Date	March 29, 2004

CERTIFICATE OF MAILING

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C., 20231

☒ with sufficient postage as first class mail

☐ as "Express Mail Post Office to Addressee" - mailing label no. _____

Type or print name	Kevin L. Russell		
Signature		Date	March 29, 2004

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/367,162	02/13/2003	Bruce W. DeKock	7116.0006	3015

152 7590 03/25/2004

CHERNOFF, VILHAUER, MCCLUNG & STENZEL
1600 ODS TOWER
601 SW SECOND AVENUE
PORTLAND, OR 97204-3157

EXAMINER	
MARC COLEMAN, MARTHE Y	
ART UNIT	**PAPER NUMBER**
3661	

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/367,162	DEKOCK ET AL.	
	Examiner	Art Unit	
	Marthe Y Marc-Coleman	3661	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 February 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *5/22/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. This office action is in response to Application Serial No. 10/367,162 filed on February 13, 2003.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 39-58 and claims 59-61 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 25-38 and claims 1-2 of U.S. Patent No. 6,574,548. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims of the application encompass the claims of the patents because it is broader.

It is well settle that the omission of an element, and its function is an obvious expedient if the remaining elements perform the same function as before. ***In re Karlson,*** 136 USPQ 184 (CCPA 1963). Also note ***Ex parte Rainu,*** 168 USPQ 375 (Bd. App. 1969). Omission of a reference element of step whose function is not needed would be obvious to one of ordinary skill in the art.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marthe Y Marc-Coleman whose telephone number is (703) 305-4970. The examiner can normally be reached on Monday-Thursday from 9:30 AM - 8:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William A Cuchlinski can be reached on (703) 308-3873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner
Marthe Y. Marc-Coleman
Marthe Y. Marc-Coleman

March 17, 2004

Notice of References Cited	Application/Control No. 10/367,162	Applicant(s)/Patent Under Reexamination DEKOCK ET AL.	
	Examiner Marthe Y Marc-Coleman	Art Unit 3661	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
	A	US-6,466,862	10-2002	DeKock et al.	701/117
	B	US-6,151,550	11-2000	Nakatani, Mitsuo	701/117
	C	US-6,574,548	06-2003	DeKock et al.	701/117
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

FORM PTO-1449 (Modified) LIST OF PATENTS AND PUBLICATIONS FOR APPLICANT'S INFORMATION DISCLOSURE STATEMENT (Use several sheets if necessary)	ATTY. DOCKET NO. KLR:7116.0006	SERIAL NO. 10/367,162
	APPLICANT DeKock, et. al.	
	FILING DATE February 13, 2003	GROUP 3661

OIPE
MAY 2 0 2003
PATENT & TRADEMARK OFFICE

REFERENCE DESIGNATION

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
MYM	AA	5,402,117	Mar. 28, 1995	Zijderhand			
	AB	5,539,645	July 23, 1996	Mandhyan, et. al.			
	AC	5,594,432	Jan. 14, 1997	Oliva, et. al.			
	AD	5,673,039	Sept. 30, 1997	Pietzsch, et. al.			
	AE	5,774,827	June 30, 1998	Smith, Jr., et. al.			
	AF	5,812,069	Sept. 22, 1998	Albrecht, et. al.			
	AG	5,845,227	Dec. 1, 1998	Peterson			
	AH	5,889,477	Mar. 30, 1999	Fastenrath			
	AI	5,926,113	July 20, 1999	Jones, et. al.			
	AJ	5,959,577	Sept. 28, 1999	Fan, et. al.			
	AK	5,982,298	Nov. 9, 1999	Lappenbusch, et. al.			
	AL	5,987,374	Nov. 16, 1999	Akutsu, et. al.			
	AM	5,987,377	Nov. 16, 1999	Westerlage, et. al.			
	AN	6,107,940	Aug. 22, 2000	Grimm			
	AO	6,150,961	Nov. 21, 2000	Alewine, et. al.			
	AP	6,151,550	Nov. 21, 2000	Nakatani			
MYM	AQ	US 6,466,862, B1	Oct. 15, 2002	DeKock, et. al.			

RECEIVED
MAY 2 2 2003
GROUP 3600

FOREIGN PATENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION YES	TRANSLATION NO
	BA							

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

		CA	

EXAMINER	DATE CONSIDERED
Matthew H. Marc-Coleman	3/17/04

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

Information Disclosure Statement --PTO-1449 (Modified)

Q:\Bonnie Dillon\KLR\DeKOCK\Form 1449 for 0006.wpd

Search Notes

Application No.	Applicant(s)	
10/367,162	DEKOCK ET AL.	
Examiner	**Art Unit**	
Marthe Y Marc-Coleman	3661	

SEARCHED			
Class	Subclass	Date	Examiner
701	117	3/17/2004	MYM
701	214	3/17/2004	MYM
701	208	3/17/2004	MYM
340	995.134	3/17/2004	MYM

INTERFERENCE SEARCHED			
Class	Subclass	Date	Examiner

SEARCH NOTES (INCLUDING SEARCH STRATEGY)		
	DATE	EXMR
West Text Search	3/17/2004	MYM

OIPE JC102 JUN 26 2003 PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION EXAMINING OPERATIONS

Applicant:	Bruce W. DeKock	Group Art Unit:
Serial No:	10/367,162	Examiner:
Filed:	February 13, 2003	
Title:	SYSTEM FOR PROVIDING TRAFFIC INFORMATION	

AMENDMENT

Chernoff Vilhauer McClung & Stenzel, LLP
1600 ODS Tower
601 SW Second Avenue
Portland, OR 97204-3157

June 23, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to NOTICE TO FILE CORRECTED APPLICATION PAPERS, replacement claims commencing on a separate sheet in compliance with 37 CFR 1.75 AND 1.121 are submitted herewith.

Please add new claims 60 and 61 to the above-identified patent application as follows:

06/27/2003 CNGUYEN 00000085 10367162
01 FC:2202 18.00 OP
02 FC:2201 126.00 OP
Adjustment date: 06/27/2003 UEDUVIJE
06/27/2003 CNGUYEN 00000085 10367162
01 FC:2202 -18.00 OP
02 FC:2201 -126.00 OP

08/27/2003 UEDUVIJE 00000018 10367162
02 FC:2202 18.00 OP

08/27/2003 UEDUVIJE 00000018 10367162
03 FC:2201 126.00 OP

Claims Amendment

In the Claims:

Please add the following new claim:

59. 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) a receiver that receives said signals transmitted by said traffic monitors; and

(c) a computer system interconnected with said receiver and said network;

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

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

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

REMARKS

Please consider the new claim..

Respectfully submitted,

Kevin L. Russell
Reg. No. 38,292
Attorneys for Applicant
Telephone: (503) 227-5631

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail postage prepaid in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 June 17, 2003.

Dated: June 17, 2003

Kevin L. Russell

Q:\Jean2\KLR\DeKock\0006 Cont\Amend add new claim .wpd

O I P E
JUN 23 2003
PATENT & TRADEMARK OFFICE

5661 $

TRANSMITTAL FORM (to be used for all correspondence after initial filing)			
		Application Number	10/367,162
		Filing Date	February 13, 2003
		First Named Inventor	Bruce W. Delack
		Group Art Unit	3661
		Examiner Name	Mahmoudian, M.
Total Number of Pages in this Submission		Attorney Docket Number	7116.0006

RECEIVED
JUN 30 2003
GROUP 3600

ENCLOSURES (check all that apply)		
☒ Fee transmittal ☐ Fee attached form	☐ Assignment Papers (for an application)	☐ After Allowance Communication to Group
☒ Amendment ☐ After Final/ Response	☐ Drawing(s)	☐ Appeal Communication to Board of Appeals and Interferences
☐ Affidavits/Declaration(s)	☐ Licensing Related Papers	☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
☐ Extension of Time Request	☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition	☐ Proprietary Information
☐ Express Abandonment Request	☐ Petition to Convert to a Provisional Application	☐ Status Letter
☐ Information Disclosure Statement	☐ Power of Attorney, Revocation, Change of Correspondence Address	☒ Additional Enclosures (identify below)
☐ Certified copy of Priority Documents	☐ Terminal Disclaimer	Our check in the amount of $18; Acknowledgment Postcard.
☐ Response to Missing Parts/ Incomplete Application	☐ Small Entity Statement	
☐ Response to Missing Parts Under 37 CFR 1.52 or 1.53	☐ Request for Refund	
	Remarks:	

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT	
Firm or Individual Name	Kevin L. Russell of Chernoff Vilhauer McClung & Stenzel, LLP
Signature	
Date	June 17, 2003

CERTIFICATE OF MAILING

I hereby certify that, on the date shown below, this correspondence is being deposited with the United States Postal Service in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

☒ with sufficient postage as first class mail

☐ as "Express Mail Post Office to Addressee" - mailing label no. _____

Type or print name	Kevin L. Russell		
Signature		Date	June 17, 2003

FEE TRANSMITTAL for FY 2003

Patent fees are subject to annual revision.

Complete If Known	
Application Number	
Filing Date	Concurrently herewith
First Named Inventor	DeKock, et al.
Examiner Name	
Art Unit	
Attorney Docket No.	KLR 7116.0006

☒ Applicant claims small entity status. See 37CFR 1.27

TOTAL AMOUNT OF PAYMENT	$537

RECEIVED JUN 30 2003 GROUP 3600

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account

Deposit Account Number: 03-1550

Deposit Account Name: Chernoff Vilhauer McClung & Stenzel

The Commissioner is authorized to:(check all that apply)

☐ Charge fees indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) during the pendency of this application

☐ Charge any fee(s) indicated below, **except for the filing fee** to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Code	Large Entity ($)	Small Entity Code	Small Entity ($)	Fee Description	Fee Paid
1001	750	2001	375	Utility filing fee	
1002	330	2002	165	Design filing fee	
1003	520	2003	260	Plant filing fee	
1004	750	2004	375	Reissue filing fee	
1005	160	2005	80	Provisional filing fee	
				SUBTOTAL (1)	$0

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

			Extra Claims		Fee from below	Fee Paid
Total Claims	21	-20** =	1	x	18	= 18
Indep. Claims	3	- 3** =	0	x	84	= 0
Multiple Dependent						= 0

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
1202	18	2202	9	Claims in excess of 20
1201	84	2201	42	Independent claims in excess of 3
1203	280	2203	140	Multiple dependent claim, if not paid
1204	84	2204	42	**Reissue independent claims over original patent
1205	18	2205	9	*Reissue claims in excess of 20 and over original patent
				SUBTOTAL (2) $18

***or number of previously paid, if greater. For reissues, see above.*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
1051	130	2051	65	Surcharge - late filing fee or oath	
1052	50	2052	25	Surcharge-late provisional filing fee or cover sheet	
1053	130	1053	130	Non-English specification	
1812	2,520	1812	2,520	For filing a request for ex-parte reexamination	
1804	920*	1804	920*	Requesting publication of SIR prior to Examiner action	
1805	1840*	1805	1840*	Requesting publication of SIR after Examiner action	
1251	110	2251	55	Extension for reply within first month	
1252	410	2252	205	Extension for reply within second month	
1253	930	2253	465	Extension for reply within third month	
1254	1,450	2254	725	Extension for reply within fourth month	
1255	1,970	2255	985	Extension for reply within fifth month	
1401	320	2401	160	Notice of Appeal	
1402	320	2402	160	Filing a brief in support of an appeal	
1403	280	2403	140	Request for oral hearing	
1451	1,510	1451	1,510	Petition to institute a public use proceeding	
1452	110	2452	55	Petition to revive - unavoidable	
1453	1,300	2453	650	Petition to revive - unintentional	
1501	1,300	2501	650	Utility issue fee (or reissue)	
1502	470	2502	235	Design issue fee	
1503	630	2503	315	Plant issue fee	
1460	130	1460	130	Petitions to the Commissioner	
1807	50	1807	50	Processing fee under 37 CFR 1.17(q)	
1806	180	1806	180	Submission of Information Disclosure Stmt.	
8021	40	8021	40	Recording each patent assignment per property (times number of properties)	
1809	750	2809	375	Filing a submission after final rejection (37 C.F.R. 1.129(a))	
1810	750	2810	375	For each additional invention to be examined (37 CFR 1.129(b))	
1801	750	2801	375	Request for Continued Examination (RCE)	
1802	900	1802	900	Request for expedited examination of a design application	
Other fee (specify)					

* Reduced by Basic Filing Fee Paid — SUBTOTAL (3) $0

SUBMITTED BY				Complete (if applicable)	
Name (print type)	Kevin L. Russell	Registration No.	38,292	Telephone	(503) 227-5631
Signature				Date	

JUN 23 2003
PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION EXAMINING OPERATIONS

Applicant:	Bruce W. DeKock	Group Art Unit:	
Serial No:	10/367,162	Examiner:	
Filed:	February 13, 2003		
Title:	SYSTEM FOR PROVIDING TRAFFIC INFORMATION		

RECEIVED
JUN 30 2003
GROUP 3600

AMENDMENT

Chernoff Vilhauer McClung & Stenzel, LLP
1600 ODS Tower
601 SW Second Avenue
Portland, OR 97204-3157

June 17, 2003

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Please amend the above-identified patent application as follows:

Void date: 08/27/2003 UEDUVIJE
08/27/2003 UEDUVIJE 00000018 10367162
01 FC:1202 -18.00 OP

08/27/2003 UEDUVIJE 00000018 10367162
01 FC:1202 18.00 OP

08/27/2003 UEDUVIJE 00000020 10367162
01 FC:2202 18.00 OP

06/24/2003 HALI11 00000041 10367162
01 FC:1202 18.00 OP

Adjustment date: 08/27/2003 UEDUVIJE
06/24/2003 HALI11 00000041 10367162
01 FC:1202 -18. OP

Claims Amendment

In the Claims:

Please add the following new claims: claim 60 and 61.

CLAIMS

39. 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 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 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 traffic information together with a signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations and providing to said one of said mobile user stations information representative of selected portions of said traffic

information database based on said respective geographic location of said one of said mobile user stations; and

(e) said one of said mobile user stations displaying graphically on said display information representative of selected portions of said traffic information database.

40. The system of claim 39 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

41. The system of claim 40 wherein said computer system compares data from said mobile user stations with said data derived from said traffic monitors before updating said traffic information database.

42. The system of claim 39 wherein said at least one of said mobile user stations is a cellular phone.

43. The system of claim 39 wherein said mobile user station further comprises a memory capable of storing a map database.

44. The system of claim 43 wherein said mobile user station displays a selected portion of said map database.

45. The system of claim 39 wherein each said mobile user station provides longitude and latitude information to said computer system.

46. The system of claim 39 wherein said location of said one of said mobile user stations is displayed graphically.

47. The system of claim 39 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic conditions.

48. The system of claim 39 wherein said computer system further comprises a map database, and said computer system compares said signal associated with said respective geographic location of said one of said mobile user stations with said map database before updating said traffic information database.

49. 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 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 signal associated with a respective geographic location of said one of said mobile user stations, and in response thereto, said computer system updating said traffic information database based on said geographic location of said one of said mobile user stations; and

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

50. The system of claim 49 wherein said at least one of said mobile user stations is a cellular phone.

51. The system of claim 49 wherein said computer system provides to said one of said mobile user stations information representative of selected portions of said traffic information database based on said respective geographic location of said one of said mobile user stations.

52. The system of claim 49 wherein said mobile user station comprises a display, and said one of said mobile user stations displays graphically on said display information representative of selected portions of said traffic information database.

53. The system of claim 49 wherein said computer system updates said traffic information database based on data derived from a plurality of traffic monitors.

54. The system of claim 49 wherein said mobile user station further comprises a memory capable of storing a map database.

55. The system of claim 54 wherein said mobile user station displays a selected portion of said map database and a selected portion of said traffic information database.

56. The system of claim 49 wherein each said mobile user station provides longitude and latitude information to said computer system.

57. The system of claim 49 wherein said location of said one of said mobile user stations is displayed graphically.

58. The system of claim 49 wherein said computer system screens data provided by said mobile user stations to determine whether said data corresponds to actual traffic conditions.

59. 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile 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.

60. (new claim) 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein less than all available traffic information is displayed by said display.

61. (new claim). 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) a receiver that receives said signals transmitted by said traffic monitors;

(c) a computer system interconnected with said receiver and said network;

(d) a mobile user station includes a display, and a receiving 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; and

(g) wherein the displayed traffic information geographically encompasses the current geographic position of said mobile user station.

REMARKS

The claims commence on a separate sheet in compliance with 37 CFR 1.75 (h) and 1.21. Claim No. 39, added by the Amendment of June 17, 2003 is included. Two new claims have been added, Claims 40 and 41.

The Examiner is asked to consider the application with the additional claims, and pass this application to issue

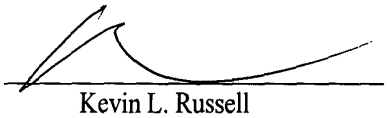
Respectfully submitted,

Kevin L. Russell
Reg. No. 38,292
Attorneys for Applicant
Telephone: (503) 227-5631

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail postage prepaid in an envelope addressed to: Mail Stop Fee Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 June 23, 2003.

Dated: June 23, 2003



Kevin L. Russell

Q:\Jean2\KLR\DeKock\0006 Cont\Amend 02 add new claims .wpd

OIPE
MAY 2 0 2003
PATENT & TRADEMARK OFFICE

TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Application Number	10/367,162
Filing Date	February 13, 2003
First Nam d Inventor	Bruce W. DeKock, et. al.
Group Art Unit	3661
Examiner Name	
Total Number of Pages in this Submission	
Attorney Docket Number	KLR:7116.0006

ENCLOSURES (check all that apply)

- ☐ Fee Transmittal Form
  - ☐ Fee Attached
- ☐ Amendment/Response
  - ☐ After Final
  - ☐ Affidavit(s)/Declaration(s)
- ☐ Extension of Time Request
- ☐ Express Abandonment Request
- ☒ Information Disclosure Statement
- ☐ Certified Copy of Priority Document(s)
- ☐ Response to Missing Part(s)/ Incomplete Application
  - ☐ Response to Missing Parts under 37 CFR 1.52 or 1.53
- ☐ Assignment Papers (for an application)
- ☐ Drawings
- ☐ Licensing-related Papers
- ☐ Petition Routing Slip (PTO/SB/69) and Accompanying Petition
- ☐ Petition To Convert to a Provisional Application
- ☐ Power of Attorney, Revocation, Change of Correspondence Address
- ☐ Terminal Disclaimer
- ☐ Small Entity Statement
- ☐ Request for Refund
- ☐ After Allowance Communication to Group
- ☐ Appeal Communication to Board of Appeals and Interferences
- ☐ Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
- ☐ Proprietary Information
- ☐ Status Letter
- ☒ Additional Enclosure(s) (please identify below)

form PTO-1449; 17 US patents; duplicate copy of this transmittal form for deposit account authorization if required; and a return, acknowledgment postcard.

Remarks: **The Commissioner is authorized to charge any additional fees, or credit any over payment, to deposit account 03-1550. A duplicate copy of this transmittal form is enclosed for use, if required, of deposit account 03-1550 as stated herein.**

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual Name	Kevin L. Russell, Esq. Chernoff, Vilhauer, McClung & Stenzel, LLP 601 SW Second Avenue Portland, Oregon 97204-3157
Signature	
Date	5/16/2003

RECEIVED
MAY 2 2 2003
GROUP 3600

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner for Patents, Washington, D.C. 20231 on this date.

Type or print name	Kevin L. Russell		
Signature		Date	5/16/2003

Q:\Bonnie Dillon\KLR\DeKOCK\IDS transmittal form for .0006.wpd

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT APPLICATION EXAMINING OPERATIONS

Applicant : Bruce W. DeKock, et. al. Group Art Unit: 3661

Serial No.: 10/367,162 Examiner :

Filed : February 13, 2003

Title : SYSTEM FOR PROVIDING TRAFFIC INFORMATION

INFORMATION DISCLOSURE STATEMENT
IN ACCORDANCE WITH 37 CFR §1.98

1600 ODS Tower
601 S.W. Second Avenue
Portland, Oregon 97204-3157
May 16, 2003

Mail Stop DD
Commissioner for Patents
P.O. Box 1450
Alexandria, VA. 22313-1450

RECEIVED
MAY 22 2003
GROUP 3600

Dear Sir:

Applicants submit herewith one (1) sheet of Form PTO-1449 (Modified) listing the patents and publications of which they are aware and which they desire to have considered by the Patent Office in accordance with 37 CFR §1.97. In accordance with 37 CFR §1.97(b)(3), this Information Disclosure Statement is