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Attorneys for PLAINTIFF TIERRAVISION, INC.

UNITED STATES DISTRICT COURT

SOUTHERN DISTRICT OF CALIFORNIA

TIERRAVISION, INC.,

Plaintiff,

v.

MICROSOFT CORPORATION,

Defendant.

Case No. '11CV2171 DMS BGS

PLAINTIFF TIERRAVISION, INC.'S COMPLAINT FOR PATENT INFRINGEMENT

DEMAND FOR JURY TRIAL

Plaintiff Tierravision, Inc., ("Tierravision") by and through its undersigned attorneys, complains and alleges against Defendant Microsoft Corporation ("Microsoft") as follows:

NATURE OF THE ACTION

1. This is a civil action for infringement of United States Patent No. RE41,983. This action arises under the laws of the United States relating to patents, including 35 U.S.C. § 281.

JURISDICTION AND VENUE

2. This Court has subject matter jurisdiction pursuant to 28 U.S.C. §§ 1331 and 1338(a) and pursuant to the patent laws of the United States of America, 35 U.S.C. § 101 *et seq.*

3. Venue properly lies within the Southern District of California pursuant to the provisions of 28 U.S.C. §§ 1391(b), (c), and (d) and 1400(b). On information and belief, Microsoft conducts substantial business directly and/or through third parties or agents in this judicial district by at least selling and/or offering to sell and/or importing the infringing products, including hardware (mobile wireless communication devices, including but not limited to cellular telephones and smartphones) and/or software for those systems (including but not limited to mapping software and mapping applications), and/or by conducting other business in this judicial district. Furthermore, Plaintiff Tierravision is headquartered in San Diego, California and its two founders and shareholders are residents of this judicial district. Furthermore, Tierravision has its principal place of business in this district, and has been harmed by Microsoft's conduct, business transactions and infringing sales in this district.

4. This Court has personal jurisdiction over Microsoft because, on information and belief, Microsoft transacts continuous and systematic business within the State of California and the Southern District of California. In addition, this Court has personal jurisdiction over Microsoft because, on information and belief, this lawsuit arises out of Microsoft's infringing activities including, without limitation, Microsoft's making, using, selling and/or offering to sell infringing products in the State of California and the Southern District of California, and/or importing infringing products into the United States. Finally, this Court has personal jurisdiction over Microsoft because, on information and belief, Microsoft has made, used, sold, offered for sale and/or imported its infringing products and placed such infringing products in the stream of

interstate commerce with the expectation that such infringing products would be made, used, sold and/or offered for sale within the State of California and the Southern District of California.

THE PARTIES

5. Plaintiff Tierravision is a California corporation with its headquarters and principal place of business at 8601-F Via Mallorca, La Jolla, CA 92037.

6. On information and belief, Defendant Microsoft Corporation ("Microsoft") is a corporation organized, existing and operating under the laws of the state of Washington with its principal place of business at One Microsoft Way, Redmond, WA 98052.

THE ASSERTED PATENT

7. On December 7, 2010, United States Patent No. RE41,983 ("the RE'983 patent"), entitled "Method of Organizing and Compressing Spatial Data," was duly and legally issued by the United States Patent and Trademark Office. The named inventor is Alfred M. Wallner of San Diego, California. The RE'983 patent is a reissue of United States Patent 6,703,947 ("the '947 patent"), which was filed on September 22, 2000, and issued on March 9, 2004. The RE'983 patent is a division of United States Patent RE40,466 ("the RE'466 patent"), which issued on August 26, 2008, and also is a reissue of the '947 patent. Tierravision is the assignee and owner of the entire right, title and interest in and to the RE'983 patent, the RE'466 patent and the '947 patent, and has the right to bring this suit for damages and other relief. A true and correct copy of the RE'983 patent is attached as Exhibit A.

8. The RE'983 patent discloses methods and systems for organizing and compressing spatial data to enable fast, incremental downloads of spatial data over a network. The disclosed methods and systems include segmenting and reducing spatial data and a location-relevant naming system for storing and accessing the data. Using the methods and systems disclosed in the RE'983 patent, devices such as smartphones are able to efficiently compute data file names based on location information, download the data information and cache the data on the remote device.

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BACKGROUND

9. Mobile wireless communication devices, including smartphones and cellular telephones, have revolutionized the way people communicate, making communication more efficient and more accessible. As mobile wireless communication devices have evolved from large, single-purpose devices into much smaller, multi-function devices, they have revolutionized many other aspects of daily life as well. They keep millions of people in touch with business, family and friends by allowing them to place and receive telephone calls, send and receive emails, connect to the Internet, stream data, watch videos and play games. One of the most important and helpful functions of today's mobile wireless devices is their ability to permit users access to detailed maps, providing driving directions and locations of businesses, especially when traveling in unfamiliar areas.

10. Smartphones are commonplace today, but this was not the case a decade ago. Ten years ago, download speeds on wireless devices were too slow and data files were too large. These realities prevented or limited the use of applications on mobile wireless communication devices. Early wireless mapping solutions were inefficient because the map data files were large and the solutions often required frequent downloads over slow Internet connections. Location-based services were impractical in this technological environment.

11. Tierravision is a San Diego company founded by Alfred Wallner and Will Cooper in or around January 2000 (www.tierravision.com). In the early 2000s, Tierravision was a promising, innovative company focused on developing advanced wireless enterprise mapping software to maximize mobile business productivity. Tierravision developed and patented its innovative ideas, and eventually developed and launched three mobile wireless communication products—the Koterra, the Locator for Salesforce and the Rocanda Locator. Each of these applications allowed users to track and manage business assets and map out addresses on a wireless device or an Internet browser.

12. Tierravision's patented mapping solutions solved the challenge of streaming significant amounts of mapping data to a wireless device. Tierravision's mapping solutions were more efficient than their counterparts, using a compressed data format and enabling interactive

vector maps and offering online/offline operation. In addition to providing revolutionary applications for personal mapping, Tierravision's mobile wireless communication products offered applications for Yellow pages, corporate business locators, public transportation trackers, highway traffic speed maps and traffic incident reports, personalized tracking of GPS-enabled assets and floor-plan displays and seating charts. Tierravision stood at the forefront of an emerging technology market for mapping applications in the then-nascent mobile wireless device space.

13. Tierravision received numerous industry accolades for its wireless mapping software during this time, including selection as a finalist in the 2007 Cingular BlackBerry Developers Challenge, selection as a semi-finalist in the 2006 San Diego Venture Group PitchFest and certification of the Tierravision Koterra and Locator as Cingular Enterprise Solution. In 2006, Tierravision also was the grand prize winner of the NAVTEQ Global LBS Challenge. Launched in 2003, the Global LBS Challenge has become one of the premier events in the wireless industry and a global symbol of LBS (location-based services) innovation and opportunity.

14. In 2006, Tierravision offered customers a Cingular Certified product that used its patented technology. Tierravision, however, had difficulty selling its products, and in or around September 2008, Tierravision was forced to suspend its business operations. Tierravision's website continues to describe its products and industry awards.

15. On information and belief, Microsoft has made, used, sold, offered for sale and/or imported mobile wireless devices, software, applications and/or programs, products and/or components that practice the claims of the RE'983 patent, as set forth more fully below. On information and belief, Microsoft provides mapping software to users and shares advertising revenue with wireless mobile device providers, such as Research in Motion Ltd. or Research in Motion Corporation.

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COUNT ONE

Infringement of the RE'983 Patent by Microsoft

16. Tierravision incorporates by reference each of the allegations set forth above.

17. On information and belief, Microsoft, without authority, has directly infringed and continues to directly infringe, under 35 U.S.C. § 271(a), the RE'983 patent at least by importing, selling, offering for sale and/or using within the United States the infringing products, including but not limited to Bing Mobile. By way of example and not limitation, Microsoft's Maps application in Bing Mobile, alone and/or in combination with other products, practices each of the limitations of at least independent claims 60 and 69 of the RE'983 patent.

18. On information and belief, Microsoft, without authority, has actively induced and continues to actively induce infringement of one or more claims of the RE'983 patent under 35 U.S.C. § 271(b), by among other things, instructing its customers to operate the accused products in a manner that infringes the claims of the RE'983 patent. Microsoft knows and intends that its customers will use the Maps application in Bing Mobile in a manner that infringes the RE'983 patent.

19. In particular, Microsoft includes the Maps application in Bing Mobile in its Windows Phone OS 7 operating system that it supplies to smartphone manufacturers such as HTC Corporation for incorporation into smartphones, such as the HTC HD7, with the intent that users of such smartphones will use the Maps application in Bing Mobile in a manner that infringes the RE'983 patent.

20. On information and belief, Microsoft, without authority, has contributorily infringed and continues to contributorily infringe the RE'983 patent under 35 U.S.C. § 271(c), by offering to sell and/or selling within the United States and/or importing into the United States one or more components of a machine, manufacture, or combination covered by the RE'983 patent that constitute a material part of the invention, which is not a staple article or commodity of commerce suitable for substantial noninfringing use. On information and belief, Microsoft knows that the component and/or apparatus is especially made or especially adapted for use in infringing the RE'983 patent

21. Microsoft had actual notice of infringement of the RE'983 patent before the filing of this complaint, but no later than March 30, 2011. On information and belief, Microsoft has nevertheless continued to directly and indirectly infringe the RE'983 patent, despite an objectively high likelihood that its actions constitute infringement of the RE'983 patent. Accordingly, Microsoft's infringement has been and continues to be willful.

22. As a result of the infringement of the RE'983 patent by Microsoft, Tierravision has suffered and will continue to suffer damages in an amount to be proven at trial.

23. Tierravision has been irreparably harmed by these acts of infringement and will continue to be harmed unless Microsoft's further acts of infringement are restrained and enjoined by order of this Court. Tierravision has no adequate remedy at law.

PRAYER FOR RELIEF

WHEREFORE, Tierravision prays for judgment:

1. That Tierravision be adjudged the owner of the RE'983 patent and entitled to all rights of recovery thereunder, and that the RE'983 patent is valid and enforceable;

2. That Microsoft be adjudged to have directly infringed, induced infringement and contributed to infringement of the RE'983 patent;

3. That Microsoft and its officers, principals, agents, attorneys, servants, employees and all others in active concert or participation with Microsoft, and its successors and assigns, be enjoined by preliminary and permanent injunction from infringement, inducement of infringement, and contributory infringement of the RE'983 patent, including but not limited to making, using, importing, offering to sell and selling the infringing products;

4. That Tierravision be awarded damages under 35 U.S.C. § 284, adequate to compensate it for Microsoft's infringement of the RE'983 patent in an amount to be proven at trial, together with interest and costs as fixed by the Court;

5. That this case be declared an exceptional case within the meaning of 35 U.S.C. § 285 and that Tierravision be awarded the attorneys' fees, costs and expenses that it incurs prosecuting this action;

6. That Tierravision be awarded prejudgment interest; and

7. For such other and further equitable relief as the Court deems proper.

DEMAND FOR JURY TRIAL

Tierravision demands a trial by jury for all issues so triable pursuant to Federal Rule of Civil Procedure 38(b).

Dated: September 16, 2011

DLA PIPER LLP (US)

By */s/ Sean C. Cunningham*

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TABLE OF CONTENTS

EXHIBITS

EXHIBIT A

US00RE41983E

(19) **United States**
(12) **Reissued Patent**
Wallner

(10) **Patent Number: US RE41,983 E**
(45) **Date of Reissued Patent: Dec. 7, 2010**

(54) **METHOD OF ORGANIZING AND COMPRESSING SPATIAL DATA**

(75) Inventor: **Alfred M. Wallner**, San Diego, CA (US)

(73) Assignee: **Tlerravision, Inc.**, La Jolla, CA (US)

(21) Appl. No.: **12/198,047**

(22) Filed: **Aug. 25, 2008**

Related U.S. Patent Documents

Reissue of:
(64) Patent No.: **6,703,947**
Issued: **Mar. 9, 2004**
Appl. No.: **09/668,695**
Filed: **Sep. 22, 2000**

U.S. Applications:

(62) Division of application No. 11/006,471, filed on Dec. 6, 2004, now Pat. No. Re. 40,466.

(51) **Int. Cl.**
H03M 7/00 (2006.01)

(52) **U.S. Cl.** **341/50**; 341/51

(58) **Field of Classification Search** 341/50, 341/51; 701/213, 215; 342/357.09, 357.1
See application file for complete search history.

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Primary Examiner—Brian Young
(74) *Attorney, Agent, or Firm*—Knobbe Martens Olson & Bear LLP

(57) **ABSTRACT**

A method for organizing and compressing spatial data to enable fast, incremental downloads of spatial data over a network. The method comprises multiple steps for segmenting and reducing spatial data, and introduces a location-relevant naming system for storing and accessing the data. Applications installed on remote devices are able to efficiently compute data file names based solely on location information, download the data over a network and cache the data on the device.

63 Claims, 3 Drawing Sheets

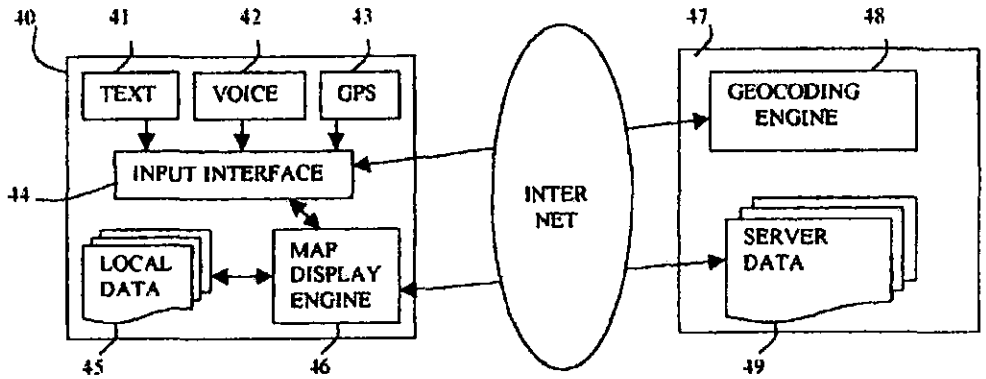

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FIG. 1

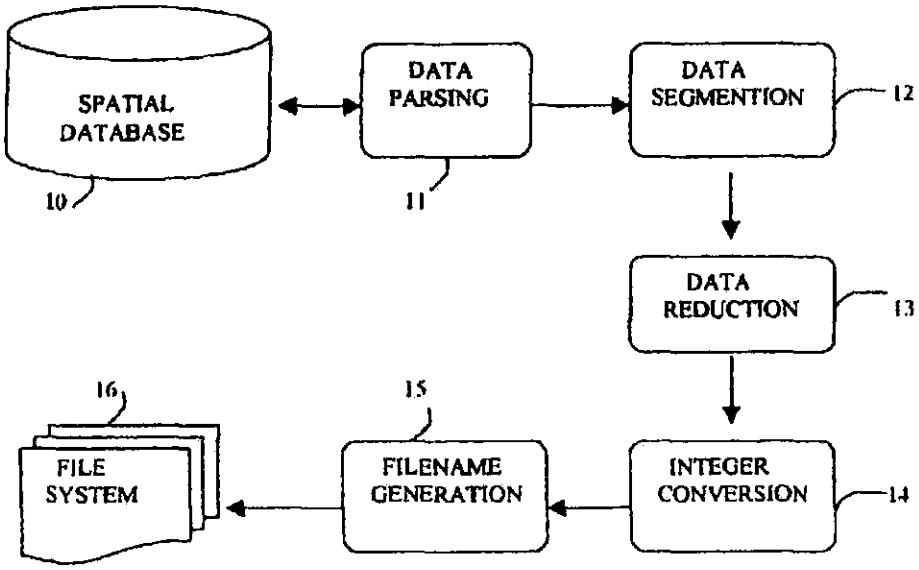
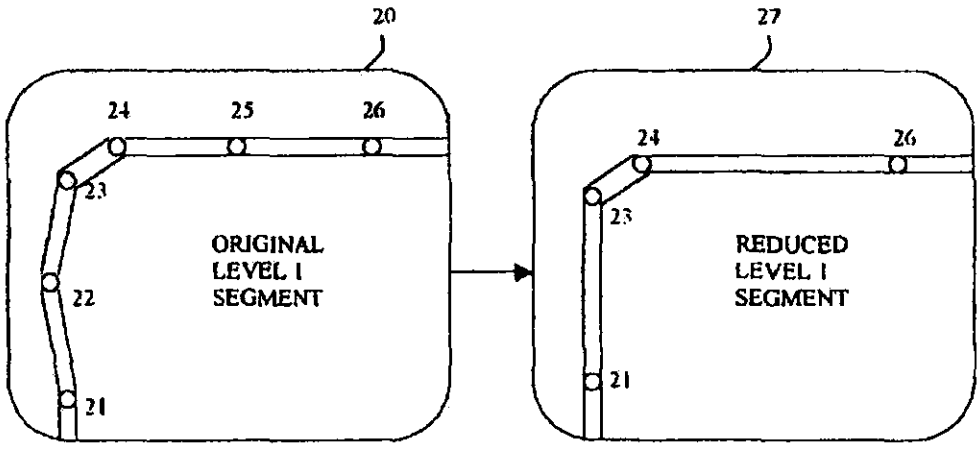

SPATIAL DATABASE
10
DATA PARSING
11
DATA SEGMENTION
12
DATA REDUCTION
13
INTEGER CONVERSION
14
FILENAME GENERATION
15
FILE SYSTEM
16

FIG. 2


20
24
25
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ORIGINAL LEVEL I SEGMENT
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24
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23
21
REDUCED LEVEL I SEGMENT

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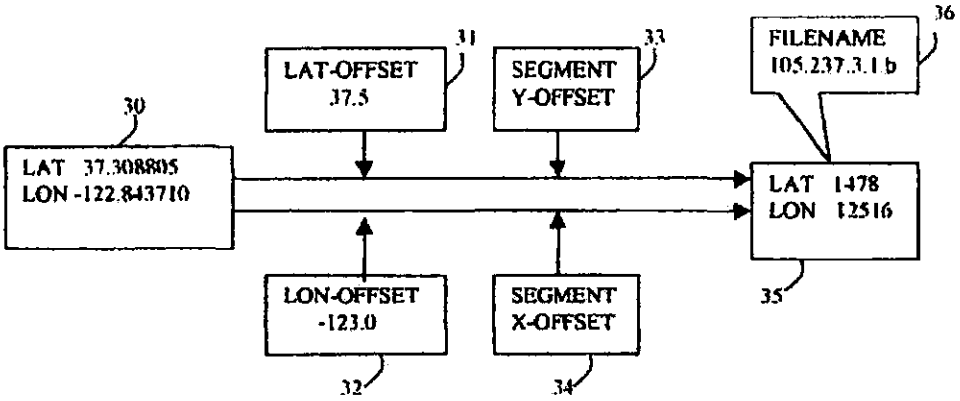
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LAT-OFFSET
37.5
33
SEGMENT
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36
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SEGMENT
X-OFFSET
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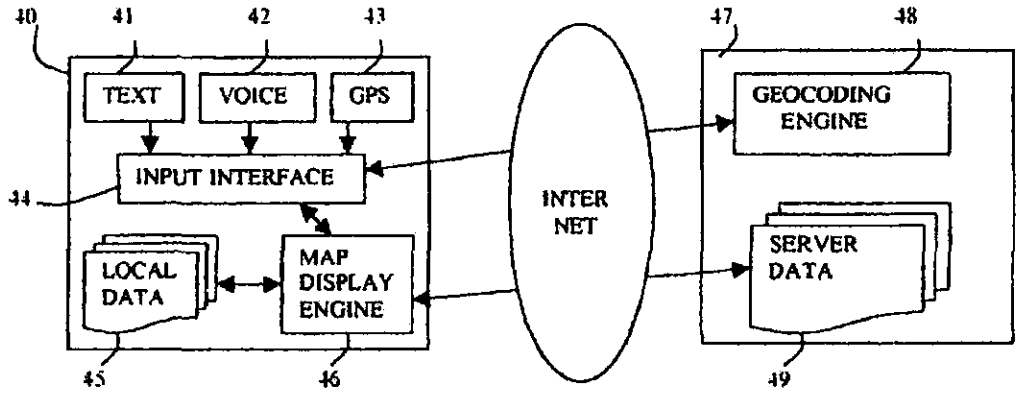
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41
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TEXT
VOICE
GPS
INPUT INTERFACE
44
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DATA
MAP
DISPLAY
ENGINE
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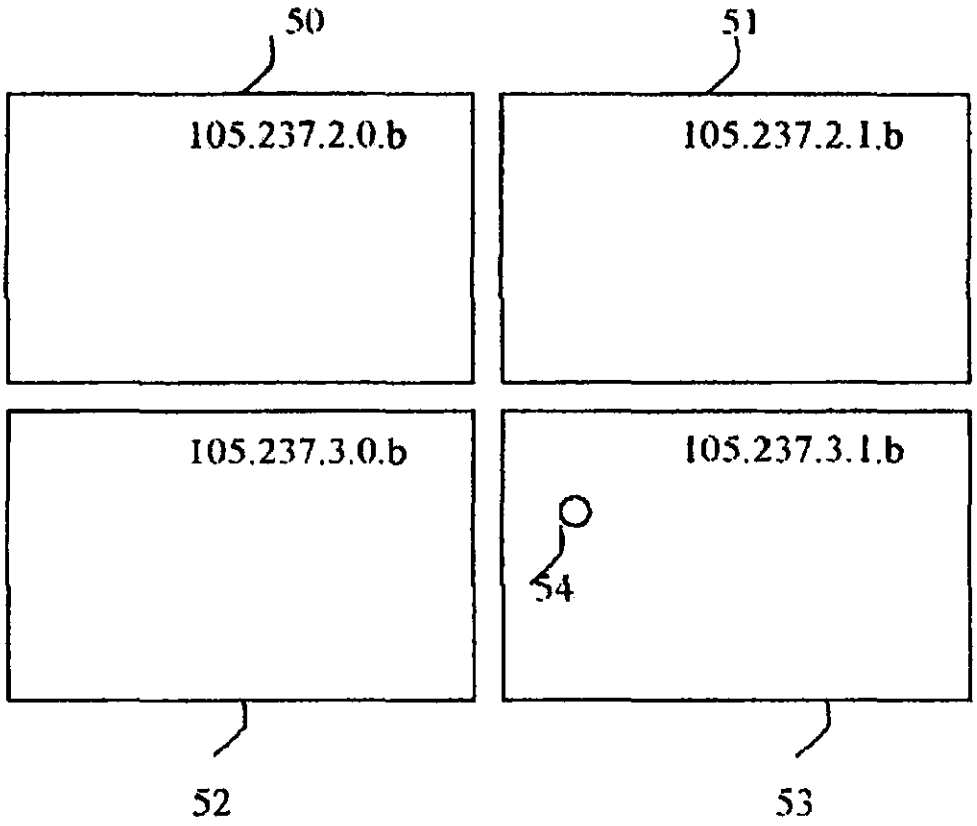
46
INTER
NET
47
48
GEOCODING
ENGINE
SERVER
DATA
49

FIG. 5



METHOD OF ORGANIZING AND COMPRESSING SPATIAL DATA

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates the additions made by reissue.

RELATED APPLICATIONS

Notice: More than one reissue application has been filed for the reissue of U.S. Pat. No. 6,703,947. The reissue applications are U.S. application Ser. No. 11/006,471, and U.S. application Ser. No. 12/198,047, filed on Aug. 25, 2008 (the present application), which claims priority as a division of application Ser. No. 11/006,471).

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention relates to the field of optimization of spatial databases for functional purposes, and in particular to optimize spatial data to achieve minimal download data size for use with cartographic applications in a networked environment.

2. Discussion of Prior Art

A spatial database comprises topographic information in the form of shapes, lines and points encoded with geodetic coordinates, as well as sets of attributes further describing each form. Internet-based applications use the spatial database to generate bitmap images based on user input such as zip code or address on a server and transmit the map images to client devices. Bitmap-based solutions have numerous limitations, which are well known in the art. While prior art describe systems, which transfer vector data to client devices instead of bitmaps, bitmap solutions remain more efficient in terms of data transfer overhead. The initial download size of vector data is significant, and unless the user interacts repeatedly with the map, the total data amount of vector data is greater than the total data amount of bitmap images. Even if the user interacts frequently with the map and the total download size requirements for bitmap and vector data were about the same, most users prefer to have a number of shorter download wait times rather than one long download wait time. Therefore, except for a few non-mainstream applications, bitmap-based solutions are widely used in networked applications.

In navigation systems, a navigation application and spatial data are packaged and supplied as a complete system on a non-volatile storage medium. Said navigation systems may be installed in vehicles or in standalone devices. These navigation systems rely on significant computing resources such as powerful processors and large permanent storage capacities. Prior art introduces solutions, which use structuring and segmenting of spatial databases to improve data access times and navigational functionality. Said solutions are not applicable when computing resources are severely limited, as encountered on personal digital assistants and smartphones, on which one would want to have access to navigation capabilities and maps. Even when said resources are made available for car navigation systems, more powerful hardware results in higher cost for the system. More importantly still, since spatial data changes quite frequently, standalone car navigation systems will inevitably start producing out-of-date navigation instructions over time. It is therefore necessary to update the local database from time to time. Improved methods for updating said local databases have been introduced by prior art. Nevertheless, the requirement

to repeatedly update data used by navigation systems remains a major inconvenience for both consumers as well as navigation system suppliers. Suppliers face substantial costs for creating and distributing the data in regular intervals, and any errors discovered after storing data sets on non-volatile media are costly to fix. To address the above problems, it is desirable to keep frequently changing spatial data on a central server and use wireless transmission networks to deliver navigation functionality to remote devices. Navigational functions such as route calculation and driving directions are performed on the server, making it also easier to integrate real-time road traffic condition data. Driving directions or maneuver instructions are text-based and relatively small in terms of data size, allowing for fairly quick wireless data transmission. On the other hand, the ability to provide graphical, cartographic map display introduces much larger data size overhead. Given the data transfer rates of wireless networks presently and during several years to come, users would experience unacceptably slow performance for map display functionality on remote devices.

The objective of this invention is to introduce a new spatial database system, which reduces the data size, makes it possible to download data in small increments as needed, and which can be used with applications such as navigation systems, for which vector-based functionality is needed.

SUMMARY OF THE INVENTION

The primary object of the invention is to provide a compressed spatial database system, which enables incremental and efficient download of spatial vector data over a network. Another object of the invention is to introduce a location-relevant naming system so that software running on network client devices can efficiently compute data segment file names depending on user interaction with a map or device-supplied location data (e.g. GPS). A third object of the invention is to enable combined online and offline operation capability of a digital map display system. Another object of the invention is to provide server-independent map display capability based on GPS location input. A further object of the invention is to introduce a system allowing updating of dynamic location content without having to retransmit redundant map data. Yet another object of the invention is to enable map centering despite using a segmented data system.

Other objects and advantages of the present invention will become apparent from the following descriptions, taken in connection with the accompanying drawings, wherein, by way of illustration and example, an embodiment of the present invention is disclosed.

In a preferred embodiment of the present invention, a method for organizing and compressing spatial data comprises the steps of parsing a spatial database, separating topographic from attribute information, segmenting the data into rectangles, eliminating subsets of the data points, further reducing the data size by converting the data from a real number format to an integer format, generating location-relevant file names for each of the rectangles and storing the files in permanent storage space. In accordance with a preferred embodiment of the present invention, map display client software computes data file names based on user interactions or device-supplied location information (GPS), fetches the computed file names from a remote server, combines data from several data files to produce an in-memory map image and draws the image on the display screen.

BRIEF DESCRIPTION OF THE DRAWINGS

The drawings constitute a part of this specification and include exemplary embodiments to the invention, which

may be embodied in various forms. It is to be understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention wherein:

FIG. **1** is a schematic block diagram illustrating the steps to generate a compressed spatial database;

FIG. **2** is a sample view of a road segment before and after applying a data size reduction algorithm;

FIG. **3** is a schematic block diagram illustrating the algorithms used for data conversion as well as data segment naming;

FIG. **4** is a schematic block diagram showing the different components and interactions of a network-based map display system;

FIG. **5** illustrates which file names are computed by the map display program given a geodetic coordinate;

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Detailed descriptions of the preferred embodiment are provided herein. It is to be understood, however, that the present invention may be embodied in vanous forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but rather as a basis for the claims and as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

FIG. **1** shows the steps involved in organizing and compressing a spatial database **10**. A spatial database comprises topographic information in the form of polygons, lines and points expressed in a geodetic coordinate system (longitude and latitude), and a set of attributes related to the topographic data entities. It is well known in the art that functions using spatial data such as routing or map display only require a subset of the entire data set. For instance, routing does not need to know about lakes and rivers, and map display does not need to know about road turn restrictions and speed limits. It is therefore possible to optimize data sets for use with a particular function. The purpose of this invention is to optimize the data set for map display functionality. The optimization process comprises a number of steps, which are described in more detail below. The initial step **11** consists of parsing the geographic database and extracting all the data for a pre-determined set of features and geographic area. The set of features comprises roads, railways, airports, rivers, lakes, shore lines, parks, points of interest and possibly others, depending how feature-rich the final map display is intended to be. In the preferred embodiment, the predetermined geographic area is a rectangle of 1° longitude and 0.5° latitude, which will be referred to as a level **2** segment.

The parsed data from step **11** is segmented into topographic components and attribute components in step **12**. Attribute information is highly redundant and is therefore an obvious compression target. Attribute information is consolidated using a simple attribute pointer or index mechanism. The topographic and attribute components are then further segmented based on location in two steps. In the preferred embodiment, the first segmentation evenly divides the area into an 8x8 grid. Each topographic data entity along with its attributes of each selected feature is assigned to one of the 64 segments. If the data entity is a polygon or a line and falls into several segments, the data entity is decomposed into two or more pieces using mathematical line and polygon splitting algorithms, and each piece is assigned to the correct segment. The resulting data segments are referred

to as level **1** segments and are stored in non-volatile memory. Another segmentation is performed on the parsed data from step **11**, this time dividing the area into a 64x64 grid. The resulting 4096 data segments are referred to as level **0** data segments, which are also stored in non-volatile memory.

In step **13**, reduction algorithms are performed on level **1** and level **2** data. In the preferred embodiment, level **1** data covers a geographic area of ⅛° longitude by 1/16° latitude. When a map picture is generated for such an area, it is neither desirable nor practical to show all the details, especially when the map picture is shown on a small screen. For instance, it is desirable to show only the main roads, while suppressing the smaller roads. The reduction algorithm used in the preferred embodiments takes these facts into consideration. Two types of data reductions are performed. First, some topographic features such as secondary roads are completely eliminated. Second, the resolution of the remaining topographic features is reduced. Many road data entities contain a number of data points, as shown in FIG. **2**, which can be safely eliminated without affecting much the overall geometry of the line or polygon. For instance, the algorithm used in the preferred embodiment eliminates every other data point, provided that the angle between the two lines connecting the point to its adjacent points does not exceed 'n' degrees. Block **20** in FIG. **2** shows a road segment consisting of data points **21** through **26**. Block **27** in FIG. **2** shows the same road after two data points, **22** and **25**, have been eliminated using the above algorithm. It should be obvious from this example that eliminating these data points did not significantly change the overall shape of the road. Furthermore, it should be noted that the map resolution at this level is fairly low, meaning that data points appearing on a display screen are very close together or even overlapping. Therefore, eliminating data points as described will have no effect on what the viewer sees. After processing all 64 level **1** data files in this way, the level **2** data file is processed in similar fashion. Even more topographic features are completely eliminated. For instance, all roads except for freeways and highways are eliminated, as well as parks, points of interest and possibly other features. Resolution of the remaining topographic features is reduced even further than for level **1** data, for instance by applying the algorithm several times to the data set.

Integer conversion as referred to in block **15** of FIG. **1** has two advantages. It reduces the data size by at least a factor of two, and it improves processing speed on potentially slow devices. Every geodetic coordinate is broken into two components: an offset and a value. The offset may be an aggregation of multiple offsets, but it always represents the topleft corner of a given rectangle. For any level **2** data segment (Lx-min, Lx-max, Ly-min, Ly-max), where Lx-min stands for minimum longitude, Lx-max for maximum longitude, Ly-min for minimum latitude and Ly-max for maximum latitude, the following formulas are used to compute offsets and values for each data point (x, y), where x is the longitude and y the latitude:

X2-offset=Lx-min

Y2-offset=Ly-max

X2-value=N * (x−x2-offset)

Y2-value=N * (y2-offset−y)

N=upper limit of valid integer values (50000 in the preferred embodiment)

The formulas for computing level 1 offsets and values are:

X1-offset=Abs((x−x2-offset)/((Lx-max−Lx-min)/K))

Y1-offset=Abs((y2-offset-y)/((Ly-max−Ly-min)/K))

X1-value=K*N*(x1−x2-offset−x1-offset)

Y1-value=K*N*(y2-offset−y1-offset−y1)

K=segment divisor (8 in the preferred embodiment for level 1 segments)

The formulas for computing level 0 offsets and values are the same as for level 1, except that K equals 64 in the preferred embodiment.

The example shown in FIG. 3 applies the above formulas to convert the geodetic coordinates 37.308805 and −122.843710 in block 30 to level 1 integers 1278 and 12516 respectively in block 35.

Level 2 offsets are shown in 31 and 32, while level 1 offsets are shown in 33 and 34. In the preferred embodiment of this invention, the upper limit N is set to 50000, but it could be a different number. The number should not exceed 65536 or 2*16, allowing it to be stored as a 2 byte integer (a short). The number should not be too low, which would result in a loss of spatial accuracy, because several real numbers would map to the same integer. The loss of accuracy is about 1 meter as implemented in the preferred embodiment of this invention.

Once a data segment has been processed and all real numbers converted to integers, a file name is assigned to the data segment as the last step in block 15 of FIG. 1. Since the computed integer values are only distance values from a given base value or offset, they are not reversible to the original real number value without the offset. A simple and efficient way to supply the necessary offset values is to make them part of a file name. As shown in the example of FIG. 3 block 36, a level 1 segment file name is comprised of a total of 4 numbers representing the 4 offsets used to compute integer values for that segment, as well as a letter to indicate the level, the letter 'b' representing level 1. The first number in 36 represents the level 2 latitude offset and the second number in 36 represents the level 2 longitude offset. The third number in 36 represents the level 1 latitude offset, and the fourth number in 36 represents the level 1 longitude offset.

In order to simplify computing requirements, a new geodetic coordinate system is introduced. The North Pole of the earth is at coordinate (0,0) and the South Pole is at (360, 360). Unlike in the standard coordinate system, no negative values are used. Every latitude degree in the standard coordinate system corresponds to 2 latitude degrees in the new system. The conversion from the standard to the new coordinate system is accomplished as follows:

New latitude=90−old latitude*2

New longitude=old longitude when range is 0° to 180°

New longitude=180+(180−old longitude) when range is −180° to 0°

In the new coordinate system, moving south and east always results in greater coordinates, while moving west and north always results in smaller coordinates, until the respective end points 0 and 360 are reached. This system significantly reduces the number of exception checking operations required by map display software when compared to the standard coordinate system.

This shows that the file name contains the offset information for the spatial data stored in the file. Thus, map display software can perform a few simple calculations to compute a file name from any geodetic coordinate, which may be supplied by GPS output. It should also be evident that the task of computing file names for data segments adjacent to a given segment is very straightforward using said file-naming system.

The following section describes how a map display program can use said file system and offer desirable functionality such as combined online/offline operation. In a typical embodiment, the map display program is installed on a wireless device such as a smartphone or personal digital assistant. As shown in FIG. 4, a map display system 40 consists of several functional components. The input interface layer 44 handles communication with the user or device. A text-input component lets the user type location information such as an address, a city, a zip code or a start/end point of a trip. The input interface 44 transmits said location information over the network to a geocoding engine 48 residing on a server 47. As is well known in the art, a geocoding engine computes a geodetic coordinate (longitude/latitude) from said information. Once the input interface 44 receives said geodetic coordinate from the geocoding engine 48, it notifies the map display engine 46. Some devices may have voice recognition capabilities. Instead of typing the user speaks said location information. The input interface 44 transmits the information from the voice recognition system 42 to the geocoding engine 48, waits for an answer and forwards it to the map display engine 46. Some devices may have a GPS receiver attached to or incorporated into the device. The input interface 44 processes the GPS output and relays said output to the map display engine 46 without the need to communicate with the geocoding engine 48.

The map display engine 46 uses said geodetic coordinates received from the input interface 44 to calculate four file names. The input interface 44 also tells the map display engine 46 which data level is needed, e.g. high-resolution level 0 is appropriate when the user specified an address, while level 1 may be more appropriate when the user specified a city or zip code. As has been shown in detail in a previous section, a geodetic coordinate can be decomposed and produce a unique file name. The map display engine 46 could then request said file name from a server 47 on which all files 49 are stored. However, in the preferred embodiment, the map display engine actually computes a total of four file names. If only one file is fetched, the geodetic coordinate of interest to the user could be located somewhere near the edge of said file. It would look awkward to the user and be less informative if the point of interest is not shown at or near the center of the map display screen. The ability to center the map picture has been lost by segmenting the spatial database. The solution employed by the map display engine 46 is to fetch three additional data segment files, which are most adjacent to said geodetic coordinate. The map display engine simply determines into which area, top-left, top-right, bottom-left or bottom-right, said coordinate falls. If a point falls in the top-left quadrant of a file, as does point 54 in FIG. 5, the map display program first finds file 105.237.3.1.b shown in block 53, and then also fetches the file to the top, block 51, to the left, block 52, and to the top-left, block 50. After fetching all 4 files from the server 47, the map display engine combines the data of the 4 files using simple offset calculations before drawing the map picture to the screen. Said geodetic coordinates can now be

displayed fairly close (within 25%) of the screen center. An even better center approximation could be achieved by using nine files. Perfect centering can be achieved by not showing a map picture of the entire available data, but instead generate a slightly zoomed-in map picture centered at said coordinate.

One objective of the invention is to provide a flexible mapping system in the sense that the map display system can function online as well as offline. Offline functionality is desirable because it offers the highest speed, since the data is accessed from local storage. The map display engine **46** gives users several options to enable offline capability. Users can select a city or zip code and download all data files for said city or zip code. Furthermore, users can reserve a certain amount of local disk space to be allocated for map data caching. When caching is enabled, the map display engine **46** automatically stores downloaded files on the local disk. As the cache fills up, new data files replace the least frequently accessed data files. A different caching algorithm, for instance based on last accessed time stamps, could be used as well. When the user has selected caching or preloading of data, the map display engine **46** always first scans the local disk space and, if available, loads data files from local space into memory instead of downloading said files from a remote server. Local caching is very useful when users frequently request the same maps. For instance, a user may want to check road traffic conditions on a daily basis. In this case, only updated traffic information such as traffic incident locations or traffic speed maps (a list of measured traffic speeds at different locations) needs to be downloaded. Said updated traffic information can be displayed on a map, which is generated from the map display engine **46** using local map data. Said offline/online capability offers optimal performance for frequently used maps as well as great flexibility regarding local storage capacities of different devices.

While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

What is claimed is:

[1. A method for organizing spatial data comprising the steps of:

a) parsing the spatial data into a plurality of packets;

b) segmenting the packets;

c) reducing a size of the packets by eliminating at least one data point from at least one display element by applying an angle comparison between an adjacent display element, wherein the at least one data point is eliminated if an angle between the at least one display element and the adjacent display element is about 180°; and

d) generating a name for each of the packets.**]**

[2. The method of claim **1**, wherein the spatial data comprises topographic information comprising a plurality of elements containing geodetic coordinates.**]**

[3. The method of claim **1**, wherein the step of parsing the spatial data comprises:

selecting at least one entity within the data, the entity selected from a group consisting of: a road, a railway, an airport, a river, a lake, a shore line, a park, an entity comprising a geometric shape, and an entity comprising a substantially rectangular shape.**]**

[4. The method of claim **1**, wherein the step of parsing the spatial data comprises:

generating a substantially rectangular element comprising about 1° longitude and about ½° latitude.**]**

[5. The method of claim **1**, wherein the step of parsing the spatial data comprises: separating a topographic element from an attribute element;

wherein the topographic element comprises elements expressed using a geodetic coordinate system; and

the attribute element is related to the topographic element.**]**

[6. The method of claim **1**, wherein the step of segmenting the packets comprises:

dividing the packets into at least one element, the element selected from a group consisting of: an 8×8 grid, a 64×64 grid, a substantially rectangular grid comprising about 1° longitude and about ½° latitude, and a substantially rectangular grid comprising about ⅛° longitude and about 1/16° latitude.**]**

[7. The method of claim **1**, wherein the step of reducing the size of the segmented packets comprises:

eliminating elements selected from a group consisting of: a polygon, a lake, a geographic area, a topographic element and an attribute element.**]**

[8. The method of claim **1**, wherein the step of reducing the size of the segmented packets comprises:

eliminating a plurality of data points from a topographic element.**]**

[9. The method of claim **1**, wherein the step of reducing the size of the segmented packets comprises:

transforming a geodetic coordinate from a real number to an integer number, wherein the integer number ranges from about 0 to about 65535.**]**

[10. The method of claim **1**, wherein the step of reducing the size of the segmented packets comprises:

eliminating a plurality of data points from at least one topographic element by applying an angle comparison between an adjacent topographic element line, wherein at least one data point is eliminated if an angle between the at least one topographic element and the adjacent topographic element line is about 180°.**]**

[11. The method of claim **1**, wherein the step of generating the name for each of the packets comprises the step of generating a location-relevant naming system.**]**

[12. The method of claim **1**, wherein the step of generating the name for each of the packets comprises the step of generating a location-relevant naming system, wherein the packet name comprises location information representing an offset from an earth origin.**]**

[13. The method of claim **12**, wherein the earth origin is selected from a group consisting of: a North Pole, and a location other than the North Pole.**]**

[14. The method of claim **1**, further including the step of: repeating any one of steps a, b, c and d to process an entire spatial database.**]**

[15. A method for displaying a map, the method comprising the steps of:

obtaining information relating to a location;

calculating at least one packet name;

determining a data level;

displaying the map; and

caching at least one packet until an amount of computer storage space is filled, and

determining which packets should be replaced.**]**

[16. The method of claim 15, wherein the step of calculating the at least one packet name comprises:

computing the at least one data packet name using a geodetic coordinate.]

[17. The method of claim 15, wherein the step of calculating the at least one packet name comprises:

calculating a request location; and

using the request location to calculate the at least one packet name.]

[18. The method of claim 15, wherein the step of calculating the at least one packet name comprises:

computing four adjacent data packet names;

fetching the packets from a server; and

combining an information contained in the packets to generate a map.]

[19. The method of claim 15, wherein the step of determining the data level comprises:

determining a resolution level selected from a group consisting of: an address, a city, a zip code and a building floor plan.]

[20. The method of claim 15, further including the step of:

caching at least one data packet until an amount of computer storage space is filled, and

determining which packets should be replaced.]

[21. The method of claim 15, further including the step of:

checking a local cache before requesting a data packet from a remote device.]

[22. A method for organizing spatial data comprising the steps of:

a) means for parsing the spatial data into a plurality of packets;

b) means for segmenting the packets;

c) means for reducing a size of the packets by eliminating at least one data point from at least one display element by applying an angle comparison between an adjacent display element, wherein the at least one data point is eliminated if an angle between the at least one display element and the adjacent display element is about 180°; and

d) means for generating a name for each of the packets.]

23. A method of processing map data in conjunction with a portable computing device having a wireless transceiver for data network communication, comprising:

computing a map data structure name based on location information or user interactions;

downloading the map data structure over a network onto the portable computing device via the corresponding data structure name;

caching the map data from the map data structure on the portable computing device;

generating a plurality of map images based on at least one of a zip code, address, or geographic location; and

transmitting the map images via the wireless data network to the portable computing device.

24. The method of claim 23, additionally comprising:

combining map data from a plurality of map data files to produce an in-memory map image; and

rendering the map image on a display screen of the portable computing device.

25. The method of claim 23, wherein the map data structure comprises a file and the data structure name comprises a file name.

26. The method of claim 23, wherein the portable computing device includes a server-independent map display capability based on GPS location input.

27. The method of claim 23, additionally comprising updating of dynamic location-based content without having to retransmit redundant map data.

28. The method of claim 23, additionally comprising enabling automatic map centering in conjunction with a plurality of map segments.

29. The method of claim 28, wherein the map segments are stored in the device cache.

30. The method of claim 28, wherein the map segments are downloaded from the network.

31. The method of claim 23, additionally comprising storing a spatial database of map data comprising geographic information in the form of polygons, lines, and/or points.

32. The method of claim 31, wherein the geographic information is expressed in a geographic coordinate system.

33. The method of claim 31, wherein the spatial database further comprises a set of attributes related to the geographic data entries.

34. The method of claim 23, additionally comprising optimizing data sets on the map data for map display functionality.

35. The method of claim 31, additionally comprising parsing the spatial database and extracting all the data for a predetermined set of features and geographic area.

36. The method of claim 35, wherein the predetermined geographic area is a rectangle of 1° longitude and 0.5° latitude.

37. The method of claim 35, additionally comprising segmenting the parsed data into geographic components and attribute components.

38. The method of claim 37, wherein the segmenting is recursively performed a plurality of times.

39. The method of claim 37, wherein the segmenting includes dividing the area into a grid.

40. The method of claim 23, wherein the portable computing device comprises at least one of a wireless phone or wireless enabled PDA.

41. A method of processing map data, comprising:

recursively segmenting map data into a plurality of map segments;

computing a map data structure name for each map segment, wherein the data structure name comprises geographic-based coordinates and wherein the data structure name comprises a filename; and

storing each segment into a data structure comprising a file having a respective map data structure name.

42. A method to reduce data in a digital map, comprising:

completely suppressing selected geographic features; and

reducing the resolution of the remaining geographic features,

wherein the reducing comprises eliminating every other data point, provided that the angle between the two lines connecting the point to its adjacent points does not exceed a predetermined angle.

43. The method of claim 42, wherein the selected geographic features include secondary roads.

44. The method of claim 42, wherein the remaining geographic features include primary roads.

45. The method of claim 42, wherein the elimination of data points does not significantly change the overall shape of the road.

46. A system for reducing data in a digital map, comprising:

means for completely suppressing selected geographic features; and

means for reducing the resolution of the remaining geographic features,

wherein the reducing comprises eliminating every other data point, provided that the angle between the two lines connecting the point to its adjacent points does not exceed a predetermined angle.

47. The system of claim 46, wherein the selected geographic features include secondary roads.

48. The system of claim 46, wherein the remaining geographic features include primary roads.

49. The system of claim 46, wherein the elimination of data points does not significantly change the overall shape of the road.

50. A computer readable storage medium having stored thereon instructions that when executed by a computer processor perform a method of reducing data in a digital map, the method comprising:

completely suppressing selected geographic features; and

reducing the resolution of the remaining geographic features, wherein the reducing comprises eliminating every other data point, wherein the elimination of data points does not significantly change the overall shape of the road.

51. The method of claim 50, wherein the selected geographic features include secondary roads.

52. The method of claim 50, wherein the remaining geographic features include primary roads.

53. The method of claim 50, wherein the reducing comprises eliminating every other data point, provided that the angle between the two lines connecting the point to its adjacent points does not exceed a predetermined angle.

54. A method of assigning names to digital map segments, comprising:

segmenting a digital map into a plurality of segments;

converting geodetic data points from real numbers to integer numbers; and

storing each segment in a data structure comprising a file and having a name comprising data point offset values.

55. The method of claim 54, wherein the geodetic coordinates are all positive integers.

56. The method of claim 55, wherein the geodetic coordinates are arranged according to the North Pole being at (0, 0), the South Pole being at (360, 360).

57. A system for assigning names to digital map segments, comprising:

a data segmentation module configured to segment a digital map into a plurality of segments;

an integer conversion module configured to convert geodetic data points from real numbers to integer numbers; and

a database configured to store each segment in a data structure comprising a file and having a name comprising data point offset values.

58. The system of claim 57, wherein the geodetic coordinates are all positive integers.

59. The system of claim 57, wherein the geodetic coordinates are arranged according to the North Pole being at (0, 0) and the South Pole being at (360, 360).

60. A map display system operating in conjunction with a portable wireless device, comprising:

an input interface layer handling communication between a user and the device and being configured to capture user input position information;

a geocoding engine, residing on a server, configured to:

receive user input position information from the portable wireless device;

compute a geodetic coordinate from the user input position information; and

transmit the geodetic coordinate to the portable wireless device; and

a map display engine configured to use the geodetic coordinates to generate a plurality of data structure names and request the data structures from a map segment server.

61. The map display system of claim 60, wherein at least one of the plurality of data structures comprises a file.

62. The map display system of claim 60, wherein the map display engine is further configured to display a map image indicative of the data in the data structures.

63. The map display system of claim 62, wherein the map picture is centered on a display on the portable wireless device.

64. The map display system of claim 62, wherein the map image comprises a slightly zoomed-in map image, which is centered at the geodetic coordinate.

65. The map display system of claim 60, wherein the user input position information comprises at least one of an address, a city, a zip code, location information, point of interest, or a start/end point of a trip.

66. The map display system of claim 60, wherein the user input position information comprises text.

67. The map display system of claim 60, wherein the user input position information comprises voice data.

68. The map display system of claim 60, additionally comprising a GPS interface to provide geographic position information for display without access to the geocoding engine.

69. A method of operating a map display system in conjunction with a portable wireless device, comprising:

receiving user input position information from the portable wireless device;

computing a geodetic coordinate from the user input position information;

generating a plurality of names based on the geodetic coordinates; and

transmitting a data structure comprising map data associated with the geodetic coordinate and associated with the respective data structure names from a map segment server.

70. The method of claim 69, wherein the data structure comprises a file.

71. The method of claim 69, further comprising:

displaying a map image indicative of data of the files, records, segments or strings.

72. The method of claim 71, the map image is centered on a display on the portable wireless device.

73. The method of claim 71, wherein the map image comprises a slightly zoomed-in map image which, when displayed, is centered at the geodetic coordinate.

74. The method of claim 69, wherein the user input position information comprises at least one of an address, a city, a zip code, location information, point of interest, or a start/end point of a trip.

75. The method of claim 69, wherein the user input geographic position information comprises text.

76. The method of claim 69, wherein the user input geographic position information comprises voice data.

77. The method of claim 69, additionally comprising receiving global positioning system (GPS) data to provide position information for display without access to the geocoding engine.

78. A method of caching digital map segments in a portable wireless device, comprising:

allocating a portion of memory for digital map segments in a cache;

executing a caching algorithm to manage the allocated cache; and

loading map data for rendering map images on a display from the cache if a particular digital map segment is stored in cache, otherwise requesting download of the particular digital map segment from a network.

79. The method of claim 78, wherein the caching algorithm uses a least frequently used technique to determine which map segments to discard when the allocated cache is full.

80. The method of claim 78, wherein the caching algorithm uses a last accessed technique to determine which map segments to discard when allocated cache is full.

81. A system for caching digital map segments in a portable wireless device, comprising:

a map display engine configured to:

allocate a portion of memory for digital map segments in a cache; and

execute a caching algorithm to manage the allocated cache, wherein the map display engine is further configured to load data for rendering an image on a display from the cache if a particular digital map segment is stored in the device, otherwise requesting download of the particular digital map segment from a network.

82. The system of claim 81, wherein the caching algorithm uses a least frequently used technique to decide which map segments to discard when the allocated cache is full.

83. The system of claim 81, wherein the caching algorithm uses a last accessed technique to decide which map segments to discard when the allocated cache is full.

84. The system of claim 81, wherein the map display engine is further configured to request download of a plurality of digital map segments adjacent to the particular digital map segment.

85. The method of claim 78, wherein requesting download of the particular map segment from the network is based on a data level of the particular map segment.

* * * * *

JS 44 (Rev. 12/07)

CIVIL COVER SHEET

The JS 44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON THE REVERSE OF THE FORM.)

I. (a) PLAINTIFFS
Tierravision, Inc.

(b) County of Residence of First Listed Plaintiff San Diego, CA
(EXCEPT IN U.S. PLAINTIFF CASES)

(c) Attorney's (Firm Name, Address, and Telephone Number)
DLA Piper LLP (US), 401 B Street, Suite 1700, San Diego, CA 92101-4297, (619) 699-2700

DEFENDANTS
Microsoft Corporation

County of Residence of First Listed Defendant King County, WA
(IN U.S. PLAINTIFF CASES ONLY)
NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE LAND INVOLVED.

Attorneys (If Known)

'11CV2171 DMS BGS

II. BASIS OF JURISDICTION (Place an "X" in One Box Only)

- ☐ 1 U.S. Government Plaintiff
- ☒ 3 Federal Question (U.S. Government Not a Party)
- ☐ 2 U.S. Government Defendant
- ☐ 4 Diversity (Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES (Place an "X" in One Box for Plaintiff and One Box for Defendant)
(For Diversity Cases Only)

	PTF	DEF		PTF	DEF
Citizen of This State	☐ 1	☐ 1	Incorporated *or* Principal Place of Business In This State	☐ 4	☐ 4
Citizen of Another State	☐ 2	☐ 2	Incorporated *and* Principal Place of Business In Another State	☐ 5	☐ 5
Citizen or Subject of a Foreign Country	☐ 3	☐ 3	Foreign Nation	☐ 6	☐ 6

IV. NATURE OF SUIT (Place an "X" in One Box Only)

CONTRACT
- ☐ 110 Insurance
- ☐ 120 Marine
- ☐ 130 Miller Act
- ☐ 140 Negotiable Instrument
- ☐ 150 Recovery of Overpayment & Enforcement of Judgment
- ☐ 151 Medicare Act
- ☐ 152 Recovery of Defaulted Student Loans (Excl. Veterans)
- ☐ 153 Recovery of Overpayment of Veteran's Benefits
- ☐ 160 Stockholders' Suits
- ☐ 190 Other Contract
- ☐ 195 Contract Product Liability
- ☐ 196 Franchise

REAL PROPERTY
- ☐ 210 Land Condemnation
- ☐ 220 Foreclosure
- ☐ 230 Rent Lease & Ejectment
- ☐ 240 Torts to Land
- ☐ 245 Tort Product Liability
- ☐ 290 All Other Real Property

TORTS

PERSONAL INJURY
- ☐ 310 Airplane
- ☐ 315 Airplane Product Liability
- ☐ 320 Assault, Libel & Slander
- ☐ 330 Federal Employers' Liability
- ☐ 340 Marine
- ☐ 345 Marine Product Liability
- ☐ 350 Motor Vehicle
- ☐ 355 Motor Vehicle Product Liability
- ☐ 360 Other Personal Injury

PERSONAL INJURY
- ☐ 362 Personal Injury - Med. Malpractice
- ☐ 365 Personal Injury - Product Liability
- ☐ 368 Asbestos Personal Injury Product Liability

PERSONAL PROPERTY
- ☐ 370 Other Fraud
- ☐ 371 Truth in Lending
- ☐ 380 Other Personal Property Damage
- ☐ 385 Property Damage Product Liability

CIVIL RIGHTS
- ☐ 441 Voting
- ☐ 442 Employment
- ☐ 443 Housing/ Accommodations
- ☐ 444 Welfare
- ☐ 445 Amer. w/Disabilities - Employment
- ☐ 446 Amer. w/Disabilities - Other
- ☐ 440 Other Civil Rights

PRISONER PETITIONS
- ☐ 510 Motions to Vacate Sentence

Habeas Corpus:
- ☐ 530 General
- ☐ 535 Death Penalty
- ☐ 540 Mandamus & Other
- ☐ 550 Civil Rights
- ☐ 555 Prison Condition

FORFEITURE/PENALTY
- ☐ 610 Agriculture
- ☐ 620 Other Food & Drug
- ☐ 625 Drug Related Seizure of Property 21 USC 881
- ☐ 630 Liquor Laws
- ☐ 640 R.R. & Truck
- ☐ 650 Airline Regs.
- ☐ 660 Occupational Safety/Health
- ☐ 690 Other

LABOR
- ☐ 710 Fair Labor Standards Act
- ☐ 720 Labor/Mgmt. Relations
- ☐ 730 Labor/Mgmt.Reporting & Disclosure Act
- ☐ 740 Railway Labor Act
- ☐ 790 Other Labor Litigation
- ☐ 791 Empl. Ret. Inc. Security Act

IMMIGRATION
- ☐ 462 Naturalization Application
- ☐ 463 Habeas Corpus - Alien Detainee
- ☐ 465 Other Immigration Actions

BANKRUPTCY
- ☐ 422 Appeal 28 USC 158
- ☐ 423 Withdrawal 28 USC 157

PROPERTY RIGHTS
- ☐ 820 Copyrights
- ☒ 830 Patent
- ☐ 840 Trademark

SOCIAL SECURITY
- ☐ 861 HIA (1395ff)
- ☐ 862 Black Lung (923)
- ☐ 863 DIWC/DIWW (405(g))
- ☐ 864 SSID Title XVI
- ☐ 865 RSI (405(g))

FEDERAL TAX SUITS
- ☐ 870 Taxes (U.S. Plaintiff or Defendant)
- ☐ 871 IRS—Third Party 26 USC 7609

OTHER STATUTES
- ☐ 400 State Reapportionment
- ☐ 410 Antitrust
- ☐ 430 Banks and Banking
- ☐ 450 Commerce
- ☐ 460 Deportation
- ☐ 470 Racketeer Influenced and Corrupt Organizations
- ☐ 480 Consumer Credit
- ☐ 490 Cable/Sat TV
- ☐ 810 Selective Service
- ☐ 850 Securities/Commodities/ Exchange
- ☐ 875 Customer Challenge 12 USC 3410
- ☐ 890 Other Statutory Actions
- ☐ 891 Agricultural Acts
- ☐ 892 Economic Stabilization Act
- ☐ 893 Environmental Matters
- ☐ 894 Energy Allocation Act
- ☐ 895 Freedom of Information Act
- ☐ 900Appeal of Fee Determination Under Equal Access to Justice
- ☐ 950 Constitutionality of State Statutes

V. ORIGIN (Place an "X" in One Box Only)
☒ 1 Original Proceeding ☐ 2 Removed from State Court ☐ 3 Remanded from Appellate Court ☐ 4 Reinstated or Reopened ☐ 5 Transferred from another district (specify) ☐ 6 Multidistrict Litigation ☐ 7 Appeal to District Judge from Magistrate Judgment

VI. CAUSE OF ACTION
Cite the U.S. Civil Statute under which you are filing (**Do not cite jurisdictional statutes unless diversity**):
35 U.S.C. Section 281
Brief description of cause:
Patent Infringement

VII. REQUESTED IN COMPLAINT:
☐ CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23
DEMAND $
CHECK YES only if demanded in complaint:
JURY DEMAND: ☒ Yes ☐ No

VIII. RELATED CASE(S) IF ANY (See instructions): JUDGE Honorable Judge Dana M. Sabraw DOCKET NUMBER 3:11-cv-00639-DMS -BGS

DATE
09/16/2011

SIGNATURE OF ATTORNEY OF RECORD
s/Sean C. Cunningham

FOR OFFICE USE ONLY

RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

INSTRUCTIONS FOR ATTORNEYS COMPLETING CIVIL COVER SHEET FORM JS 44

Authority For Civil Cover Sheet

The JS 44 civil cover sheet and the information contained herein neither replaces nor supplements the filings and service of pleading or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. Consequently, a civil cover sheet is submitted to the Clerk of Court for each civil complaint filed. The attorney filing a case should complete the form as follows:

I. (a) Plaintiffs-Defendants. Enter names (last, first, middle initial) of plaintiff and defendant. If the plaintiff or defendant is a government agency, use only the full name or standard abbreviations. If the plaintiff or defendant is an official within a government agency, identify first the agency and then the official, giving both name and title.

(b) County of Residence. For each civil case filed, except U.S. plaintiff cases, enter the name of the county where the first listed plaintiff resides at the time of filing. In U.S. plaintiff cases, enter the name of the county in which the first listed defendant resides at the time of filing. (NOTE: In land condemnation cases, the county of residence of the "defendant" is the location of the tract of land involved.)

(c) Attorneys. Enter the firm name, address, telephone number, and attorney of record. If there are several attorneys, list them on an attachment, noting in this section "(see attachment)".

II. Jurisdiction. The basis of jurisdiction is set forth under Rule 8(a), F.R.C.P., which requires that jurisdictions be shown in pleadings. Place an "X" in one of the boxes. If there is more than one basis of jurisdiction, precedence is given in the order shown below.

United States plaintiff. (1) Jurisdiction based on 28 U.S.C. 1345 and 1348. Suits by agencies and officers of the United States are included here.

United States defendant. (2) When the plaintiff is suing the United States, its officers or agencies, place an "X" in this box.

Federal question. (3) This refers to suits under 28 U.S.C. 1331, where jurisdiction arises under the Constitution of the United States, an amendment to the Constitution, an act of Congress or a treaty of the United States. In cases where the U.S. is a party, the U.S. plaintiff or defendant code takes precedence, and box 1 or 2 should be marked.

Diversity of citizenship. (4) This refers to suits under 28 U.S.C. 1332, where parties are citizens of different states. When Box 4 is checked, the citizenship of the different parties must be checked. (See Section III below; federal question actions take precedence over diversity cases.)

III. Residence (citizenship) of Principal Parties. This section of the JS 44 is to be completed if diversity of citizenship was indicated above. Mark this section for each principal party.

IV. Nature of Suit. Place an "X" in the appropriate box. If the nature of suit cannot be determined, be sure the cause of action, in Section VI below, is sufficient to enable the deputy clerk or the statistical clerks in the Administrative Office to determine the nature of suit. If the cause fits more than one nature of suit, select the most definitive.

V. Origin. Place an "X" in one of the seven boxes.

Original Proceedings. (1) Cases which originate in the United States district courts.

Removed from State Court. (2) Proceedings initiated in state courts may be removed to the district courts under Title 28 U.S.C., Section 1441. When the petition for removal is granted, check this box.

Remanded from Appellate Court. (3) Check this box for cases remanded to the district court for further action. Use the date of remand as the filing date.

Reinstated or Reopened. (4) Check this box for cases reinstated or reopened in the district court. Use the reopening date as the filing date.

Transferred from Another District. (5) For cases transferred under Title 28 U.S.C. Section 1404(a). Do not use this for within district transfers or multidistrict litigation transfers.

Multidistrict Litigation. (6) Check this box when a multidistrict case is transferred into the district under authority of Title 28 U.S.C. Section 1407. When this box is checked, do not check (5) above.

Appeal to District Judge from Magistrate Judgment. (7) Check this box for an appeal from a magistrate judge's decision.

VI. Cause of Action. Report the civil statute directly related to the cause of action and give a brief description of the cause. **Do not cite jurisdictional statutes unless diversity**. Example: U.S. Civil Statute: 47 USC 553
Brief Description: Unauthorized reception of cable service

VII. Requested in Complaint. Class Action. Place an "X" in this box if you are filing a class action under Rule 23, F.R.Cv.P.

Demand. In this space enter the dollar amount (in thousands of dollars) being demanded or indicate other demand such as a preliminary injunction.

Jury Demand. Check the appropriate box to indicate whether or not a jury is being demanded.

VIII. Related Cases. This section of the JS 44 is used to reference related pending cases if any. If there are related pending cases, insert the docket numbers and the corresponding judge names for such cases.

Date and Attorney Signature. Date and sign the civil cover sheet.