Appeal Decision

Appeal No. 2017-12517

Kanagawa, Japan
Appellant   FUJITSU LIMITED

Tokyo, Japan
Patent Attorney   ITOH, Tadashige

Tokyo, Japan
Patent Attorney   ITOH, Tadahiko

The case of appeal against the examiner's decision of refusal of Japanese Patent Application No. 2013-85904, entitled "Land Boundary Display Program, Method, and Terminal Apparatus" (the application published on November 6, 2014, Japanese Unexamined Patent Application Publication No. 2014-209680) has resulted in the following appeal decision:

Conclusion
The appeal of the case was groundless.

Reason
No. 1 History of the procedures
The application was filed on April 16, 2013, and the summary of the procedures is as follows:

Notice of reasons for refusal	: November 17, 2016 (drafting date)
Written opinion	: January 23, 2017
Written amendment	: January 23, 2017
Examiner's decision of refusal	: May 17, 2017 (drafting date)
Appeal against the examiner's decision of refusal	: August 23, 2017

No. 2 The Invention
The inventions relating to Claims 1-6 of the present application are as specified by the matters described in Claims 1-6 in the scope of claims which were amended by the written amendment dated January 23, 2017, and the invention relating to Claim 1 of those claims (hereinafter, referred to as "the Invention") is as follows:
Note that reference symbols of the constitutions of the Invention have been added by the body for explanation and hereinafter, they are referred to as constitution A to constitution E.

(The Invention)
(E) A land boundary display program that makes a computer execute the processing of:
(A) executing an imaging process when an imaging request is detected
(B) specifying an imaging range based on a location, an imaging orientation and an elevation angle of a terminal apparatus and a height of the terminal apparatus from the

ground when the imaging process is executed;
(C) specifying an area corresponding to a plot of land in a captured imaged based on the imaging range being specified; and
(D) reading out boundary line information of the plot of land corresponding to latitude and longitude information from a storage part; generating an image by overlapping the area being specified with the boundary line information being read out ; and displaying the image at a display device.

No. 3 Reasons for refusal of the examiner's decision
        The reasons for refusal of the examiner's decision are outlined as follows:

        The inventions according to Claims 1 to 6 in this application could have been easily made by a person ordinarily skilled in the art of the inventions based on the inventions described in the following distributed publications or inventions that had become available to the public through electric communication lines in Japan or a foreign country prior to the priority date.   Thus, the appellant should not be granted a patent for the inventions under the provisions of Article 29(2) of the Patent Act.

*Claims 1, 2, 5, and 6
*Cited documents, etc. 1 to 3

*Claims 3 and 4
*Cited documents, etc. 1 to 4

Description
1. Japanese Unexamined Patent Application Publication No. 2012-133471
2. Japanese Unexamined Patent Application Publication No. 2000-358240 (document indicating well-known arts)
3. Japanese Unexamined Patent Application Publication No. H06-284330 (document indicating well-known arts)
4. Japanese Unexamined Patent Application Publication No. 2009-217660 (document indicating well-known arts)

No. 4 Description in Cited Document, and Cited Invention
1 Cited Document 1
(1) Described matters in Cited Document 1
        Japanese Unexamined Patent Application Publication No. 2012-133471 that is Cited Document 1 cited in the reasons for refusal of the examiner's decision describes the following matters with drawings with regard to "Image Composer, Image Composition Program, and Image Composition System" (title of the invention).
        Underlines are added by the body for emphasis.

A   "[0001]
The present invention relates to a device, program, and system for superimposing and displaying a virtual image on a real space image obtained by imaging a real space. More specifically, the present invention relates to an image composer, image composition program, and image composition system for superimposing and displaying

a virtual space image, which is created on the basis of a space model, on a real space image and for displaying the virtual space image in perspective in accordance with the perspective of the real space image."

B   "[0032]
(Terminal device)
A terminal device 1 shown in FIG. 2 (a) will be described. The terminal device 1 includes at least a camera 1a (image acquisition means), a sensor (measurement means) not being illustrated, a monitor 1b (display screen), and an electronic computer (hereinafter, referred to as 'computer'). This terminal device 1 is preferably compact and easily portable by a person, and a commercially available mobile phone and portable computer including a camera and sensor can be used as the terminal device and in addition, a remodeled digital camera or an exclusively created product can also be used.
[0033]
An image picked up by the camera 1a of the terminal device 1 is displayed on a monitor 1b, wherein a scene in a direction toward which the camera 1a is directed is always displayed and the display is also performed following the movement of the camera 1a, in so-called live view. As a matter of course, the image can be obtained as a still image by shutter operation."

C   "[0034]
A sensor of the terminal device 1 can be roughly divided into two types, a position measurement sensor for measuring position information of the camera 1a and a posture measurement sensor for measuring the posture of the camera 1a.
[0035]
The position measurement sensor obtains the position coordinates of the camera 1a, wherein the position coordinates refer to three-dimensional coordinates (X, Y, and Z) (it can also be the latitude, longitude, and elevation). A typical position measurement sensor is a GPS; besides, publicly known positioning techniques can be used such as a positioning method using a wireless LAN access point (Place Engine, etc.), a positioning method using visible light communication in which the high-speed blink of an LED is transmitted as a signal, IMES (Indoor Messaging System) in which a GPS is disposed indoors for positioning, a positioning method for obtaining position information from a QR code, visual marker (marker used in ARToolKit, etc.), RFID tag, etc., and a positioning method using infrared communication. Those methods can also be used in combination, for example, in such a manner that a GPS is used outdoors and the wireless LAN method is used indoors.
[0036]
The posture measurement sensor obtains the posture of the camera 1a, wherein the posture refers to the direction and the tilt toward which the camera 1a is directed thereof. More specifically, when it is assumed that the lateral axis in a horizontal plane is an X axis, the longitudinal axis in the horizontal plane is a Y axis, and a vertical axis is a Z axis, the rotation around the X axis, ω (pitch), the rotation around the Y axis, ϕ (roll), and the rotation around the Z axis, κ (yaw) are elements for determining the posture. Typical posture measurement sensors are a geomagnetic sensor (electronic compass) for measuring the rotation around the Z axis κ; that is, an azimuth, and an acceleration

sensor for measuring the rotation around the X axis ω and the rotation around the Y axis φ.   In addition, a publicly known art such as a gyro sensor can also be used.   Further, a mobile phone terminal including a so-called six-axis sensor, in which both an electronic compass and acceleration sensor are included, is commercially available; so, it is preferable to use such a terminal device."

D   "[0037]
(Virtual space image)
A virtual space image will be described.   As described above, a virtual space image is one that is obtained by further imaging a virtual space model which is created by performing arithmetic processing of a space model.
[0038]
A space model refers to a collection of pieces of space information for representing a ground object by a specific position on the Earth, specific shape, and size.   It should be noted that the space information here refers to information for representing the position of a ground object, such as its coordinates, latitude and longitude, etc.; for example, two-dimensional coordinates (X and Y) and three-dimensional coordinates (X, Y, and Z).   In addition, the ground object here means no more than an object that can be represented by space information and is not limited to an object (an existing object) that actually exists.   For example, such objects conceptually created by persons (conception objects) as the boundaries of plots of land, borders between cities, towns, and villages, planned buildings such as unconstructed roads and apartments,   and danger zones such as earth-flow disaster caution zones and designated landslide-threatened areas are all ground objects, too, if they can represent their specific positions and specific shapes/sizes by space information thereof."

E   "[0041]
A space model is stored as a database in a storage area of a computer, etc. (storage means).   Required space information is obtained from this space model database and predetermined arithmetic processing is performed, to obtain the specific position, specific shape, and size of a ground object.   One that is obtained here is a virtual space model.   Furthermore, as described above, the ground objects include existing objects (visible objects and invisible objects); that is, existing objects may be created as virtual space models; however, the word, 'virtual' is used in the meaning that those models are obtained by calculation.   One that is created by a space model is referred to as a virtual space model even if it is an existing object."

F   "[0042]
From the virtual space model, an image to be displayed on the monitor 1b of the terminal device 1; that is, a virtual space image, is created.   When a virtual space image at a location of photographing by the camera 1a is displayed on the monitor 1b, information which cannot be obtained only by sight can be also obtained at the same time, which provides great usefulness.   In this case, the virtual space image is preferably displayed at an actually existing position also on the monitor 1b.   For example, even though a sewer pipe 3 is actually buried on the left side of a road, if the monitor 1b displays a sewer pipe 3V (virtual space image) on the right side of a roadway, it causes confusion despite the intention.

[0043]

In addition, as shown in FIG. 2(a), the real space image displayed on the monitor 1b is displayed in the state of being actually seen; that is, in the state of representing perspective (hereinafter, display in the state of representing perspective is referred to as 'perspective display') and therefore, the virtual space image should be also displayed in perspective so as not to cause misunderstanding. If, for example, only the sewer pipe 3V is displayed in parallel with the vertical frame of the monitor 1b in FIG. 2(a), the sewer pipe 3V is misunderstood as being buried off the road. Information related to an actually photographed 'object' has conventionally been displayed by a tag in the vicinity of the 'object' is displayed on the monitor 1b; however, differently from the case of information of a 'point' such as a tag, when a ground object of 'line' or 'surface' is displayed on a real space image, not only just alignment but a devised display method therefor is necessary.

[0044]

Therefore, in the Invention, a virtual space image is also displayed on the monitor 1b in a state of being supposed to be actually displayed when photographing is actually performed. More specifically, in the case of the sewer pipe 3V (virtual space image) shown in FIG. 2 (a), the sewer pipe 3V is displayed at a planar position where it is actually buried, in the real space image displayed on the monitor 1b, and it is displayed in perspective like a real space image (for example, like a roadway and sidewalk)."

G   "[0045]

  In this case, since the virtual model has only space information (coordinates) of the real space, it is unclear in this situation where (at which pixel) to display it on the monitor 1b. Therefore, it is necessary to define where and in what shape on the monitor 1b the virtual space model should be represented such that, for example, an arbitrary coordinate system is set on the monitor 1b and real space coordinates of the virtual space model are converted into the arbitrary coordinate system of the monitor 1b.

[0046]

In addition, in order to display the virtual space image in perspective, it is necessary to grasp the perspective state in the real space image, and further, it is necessary to obtain a geometric relationship between an arbitrary coordination system on the monitor 1b which is set in this perspective state and a coordination system in the real space. The perspective state in a real space image can be generally grasped by using perspective. This perspective is a technique used not only pictures but also in various fields of planar display for design drawing, camera, etc. and in recent years, it is often used in the field of computer graphics (CG). A method for representing a three-dimensional object existing in a real space in a manner of displaying three-dimensionally (so as to allow a three-dimensional feeling to be obtained) on a two-dimensional plane is a perspective method, and one represented by this perspective method is called a 'perspective view.' For example, the real space image in FIG. 2(a) is a perspective view which is displayed in perspective so that every line is converged toward one vanishing point.

[0047]

The ground object represented by the real space image is an existing object and therefore, it should have coordinates of the real space. By grasping how those real space coordinates of the existing object are being displayed on the monitor 1b, an arbitrary coordinate system on the monitor 1b can be defined. This can be optically

obtained from the real space coordinates of the camera 1a, the posture of the camera 1a, and the specifications of the camera 1a (view angle, focal distance, etc.). Further, the three-dimensional coordinates (X, Y, Z) measured by the position measurement sensor can be used as the real space coordinates of the camera 1a and the values (ω, ϕ, and κ) measured by the posture measurement sensor can be used as the posture of the camera 1a.

[0048]

When an arbitrary coordinate system on the monitor 1b is defined on the basis of the real space coordinates of an existing object represented by a real space image, the real space coordinates can be represented by this arbitrary coordinate system and similarly, a virtual space model having space information can also be represented by the arbitrary coordinate system on the monitor 1b. Thus, a virtual space image is created so that a virtual space model is arranged in an arbitrary coordinate system on the monitor 1b and is displayed on the monitor 1b. Although a virtual space image actually consists of data to be processed by a computer, including arrangement information on the monitor 1b (correspondence with pixels), brightness information (RGB, etc.), etc., one that has been brought into a state of being visible as a result of being displayed on the monitor 1b is referred to as a virtual space image, for the sake of convenience."

H   "[0049]

(Monitor display)

Since the real space image arranged in an arbitrary coordinate system on the monitor 1b is a perspective view in which it is displayed in perspective, similarly, a virtual space image which is obtained by arranging a virtual space model in the arbitrary coordinate system on the monitor 1b is also a perspective view in which it is displayed in perspective. When the real space image displayed in perspective and the virtual space image displayed in perspective are displayed so as to be superimposed on the monitor 1b, the positional relation between the virtual space image (sewer pipe 3V), a roadway, and sidewalks can be intuitively grasped as shown in FIG. 2(a), which provides great usefulness.

[0050]

When a user informs the terminal device about displaying a virtual space image by, for example, operating the 'display button' of the terminal device 1, a virtual space image is created on the basis of measurement values obtained by sensors (position measurement sensor and posture measurement sensor) and a space model, and this virtual space image is displayed on the monitor 1b. A virtual space image may be created by the terminal device 1; or a server communicable with the terminal device 1 may be provided so as to make the server create a virtual space image and distribute it to the terminal device 1. The virtual space image displayed on the monitor 1b remains unchanged until the next operation (for example, the next 'display button' operation) is performed. However, the display of a virtual space image on the monitor 1b may be automatically performed whenever necessary at a timing when a sensor obtains a measurement value, not limited to a timing of a user operation.

[0051]

A virtual space image can be created also based on a conception object such as a plot boundary line 4V as shown in FIG. 3(a), not limited to the sewer pipe 3V which is created based on the existing object as in FIG. 2(a). In addition, by providing the plot

boundary line with an arbitrary width (height), the plot boundary line can be displayed as a surface, that is, a plot boundary surface 5V shown in FIG. 3(b).   Further, if a space model includes space information that enables creation of the cross-sectional view of a road, display can be performed as if part of the road is excavated.   As described above, if a virtual space image created as a perspective view matched with the perspective display of a real space image can be displayed so as to be superimposed on the real space image, a plot boundary can be visually checked only by holding the terminal device 1 up at the site without surveying a plot and further, a state under a road can be visually checked without actual excavation; which provides great usefulness."

I   "[0055]
Generally, a space model is constructed in a geographically wide range and therefore, it has space information of a ground object for a range significantly exceeding a range displayed by the monitor 1b.   Accordingly, when an arbitrary coordinate system on the monitor 1b is optically obtained on the basis of the real space coordinates of the camera 1a, the posture of the camera 1a, and the specifications of the camera 1a, the range in the space model which is created as a virtual space image (that is, a drawing range) is extracted at the same time.   Naturally, this does not mean extraction in units of ground objects, but it means extraction of the drawing range of a ground object when part of the ground object cannot be included within the monitor 1b."

J   "[0070]
(Image composition program)
The image composition program of the Invention makes a computer execute the technique described so far; specifically, it includes: a model reading function for retrieving and reading predetermined space information from a space model database; a measurement value reading function for reading a value measured by measurement means such as a GPS or six-axis sensor; an image creation function for creating a virtual space model from the space information and measurement value and further creating a virtual space image; and a display function for displaying the virtual space image so as to superimpose it on a real space image on the monitor 1b.   In addition, it can include a display control function for selecting whether or not to display the virtual space image on the monitor 1b and/or can include a display position adjustment function for displaying the virtual space image at a correct position (adjustment by a user operation and/or automatic adjustment)."

(2) Invention described in Cited Document 1
        The invention described in Cited Document 1 is identified as follows:

A   Regarding the image composition program
        According to the above (1) A, B, E, and J, Cited Document 1 describes the invention of 'an image composition program that makes a computer of a terminal device including a camera, monitor, and storage area execute the processing of superimposing and displaying a virtual image on a real space image obtained by imaging a real space.'

B   Regarding photographing
        According to the description in (1) B above, Cited Document 1 describes that the

image composition program of Cited Document 1 'executes photographing by the camera provided on the terminal device.'

C   Regarding the coordinates and posture

According to the description in (1) C above, it is described that the image composition program of Cited Document 1 "obtains the position coordinates of the camera 1a," wherein the position coordinates refer to the "latitude, longitude, and elevation."

In addition, according to the description in (1) C above, the image composition program in Cited Document 1 "obtains the posture of the camera 1a," wherein the posture refers to "the direction and the tilt toward which the camera 1a is directed" and "when it is assumed that the lateral axis in a horizontal plane is an X axis, the longitudinal axis in the horizontal plane is a Y axis, and a vertical axis is a Z axis, the rotation around the X axis, ω (pitch), the rotation around the Y axis, ϕ (roll), and the rotation around the Z axis, κ (yaw)."

Further, according to the description in (1) G above, Cited Document 1 describes that "the three-dimensional coordinates (X, Y, Z) measured by the position measurement sensor can be used as the real space coordinates of the camera 1a" and "the values (ω, ϕ, and κ) measured by the posture measurement sensor can be used as the posture of the camera 1a."

That is, Cited Document 1 describes that the image composition program of Cited Document 1 'obtains the real space coordinates of the camera by using the latitude, longitude, and elevation of the camera, and the posture of the camera by using the rotation around the Z axis, κ (yaw), and the rotation around the X axis, ω (pitch).'

D   Regarding the arbitrary coordinate system

According to the description in (1) G above, Cited Document 1 describes that "the ground object represented by the real space image is an existing object," "by grasping how those real space coordinates of the existing object are being displayed on the monitor 1b, an arbitrary coordinate system on the monitor 1b can be defined," and the arbitrary coordinate system "can be optically obtained from the real space coordinates of the camera 1a, the posture of the camera 1a, and the specifications of the camera 1a (view angle, focal distance, etc.)."

Accordingly, Cited Document 1 describes that the image composition program of Cited Document 1 'defines an arbitrary coordinate system on the monitor by grasping how the real space coordinates of the existing object represented by the real space image are being displayed on the monitor from the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.).'

E   Regarding the acquisition of space information

According to the description in (1) E above, Cited Document 1 describes that "a space model is stored as a database in a storage area of a computer, etc." and "required space information is obtained from this space model database."

In addition, according to the description in (1) D above, Cited Document 1 describes that the "space model" refers to "a collection of pieces of space information," the "space information refers to information for representing the position of a ground

object, such as its coordinates, latitude and longitude, etc.," and the "ground object" refers to "boundary of a plot of land."

Further, according to the description of (1) I above, Cited Document 1 describes that "when an arbitrary coordinate system on the monitor 1b is optically obtained on the basis of the real space coordinates of the camera 1a, the posture of the camera 1a, and the specifications of the camera 1a, the range in the space model which is created as a virtual space image (that is, a drawing range) is extracted at the same time."

That is, Cited Document 1 describes that the image composition program of the Cited Document 1 'obtains space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area."

F   Regarding display

According to the description in (1) E above, Cited Document 1 describes that "predetermined arithmetic processing is performed" for the space information obtained from the database so as "to obtain the specific position, specific shape, and size of a ground object," thereby obtaining a virtual space model.

In addition, according to the description in (1) F above, Cited Document 1 describes that "a virtual space image is created" from the virtual space model.

Further, from the description in (1) G above, Cited Document 1 describes that as with the real space image arranged in an arbitrary coordinate system on the monitor 1b, the virtual space image is "is obtained by arranging a virtual space model in the arbitrary coordinate system on the monitor 1b."

Further, according to the description in (1) H above, Cited Document 1 describes that the "real space image and virtual space image displayed in perspective are displayed in a superimposed manner on the monitor 1b."

And further, according to the description in (1) F above, Cited Document 1 describes that "the virtual space image is displayed at an actually existing position also on the monitor 1b."

That is, Cited Document 1 describes that the image composition program of Cited Document 1 'creates a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, superimposes the created virtual space image on a real space image at an actually existing position on the monitor, and displays it on the monitor.'

G   Summary

According to the above, it can be recognized that Cited Document 1 describes the following invention (hereinafter, referred to as "Cited Invention"). Hereinafter, Cited Invention is described by using constitution a to constitution e.

(Cited Invention)
(e) An image composition program that makes a computer of a terminal device including a camera, a monitor, and a storage area execute the processing of superimposing and displaying a virtual image on a real space image obtained by imaging a real space; specifically, makes the computer of the terminal device execute the processing of:

(a) executing photographing by the camera provided on the terminal device;
(b) obtaining the real space coordinates of the camera by using the latitude, longitude, and elevation of the camera, and the posture of the camera by using the rotation around the Z axis, κ (yaw), and the rotation around the X axis, ω (pitch); defining an arbitrary coordinate system on the monitor by grasping how the real space coordinates of the existing object represented by the real space image are being displayed on the monitor from the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.);
(c) obtaining space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area; and
(d) creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, superimposing the created virtual space image on a real space image at an actually existing position on the monitor, and displaying it on the monitor.

2. Cited Document 2
(1) Described matters in Cited Document 2
        Japanese Unexamined Patent Application Publication No. 2000-358240 that is Cited Document 2 cited in the reasons for refusal of the examiner's decision describes the following matters with drawings with regard to "Controller for Monitor Camera" (title of the invention).
        Underlines are added by the body for emphasis.

A   "[0040] When the pan angle and tilt angle of the camera platform 202, and the <u>view angle</u> of the monitor camera 201 are obtained as the state information of the monitor camera 201 and camera platform 202, the photographing point and <u>photographing range</u> displayed by map display means 210 are calculated as follows:
[0041] FIG. 2 illustrates the method of calculating the photographing point; wherein it is assumed that <u>the installation height of the camera is H, the installation point of the camera is (xc, yc), the pan angle with respect to the true north direction is θ (east direction is positive), the tilt angle with respect to the horizontal direction is φ (downward direction is positive)</u>, the photographing point of the camera is (xo, yo), and the distance between the camera installation point and photographing point is dx in the east-west direction and dy in the north-south direction.   (dx, dy) can be obtained by the equation indicated by Expression 1 below.
[0042]
[Expression 1] $dx = h/\tan\phi * \sin\theta$
$dy = h/\tan\phi * \cos\theta$
Then, the photographing point (xo, yo) can be obtained by the equation indicated by Expression 2 below.
[0043]
[Expression 2] $xo = xc + dx$
$yo = yc + dy$
Obtained here is a distance from a certain reference point and therefore, in order to display a point based on the latitude and longitude by the map display means 210, conversion in accordance with it is further required.   By using the above expressions,

the photographing point is obtained from the state information of the camera platform.
[0044] Next, calculation of a photographing range is described.   FIG. 3 illustrates the method of calculating a photographing range; wherein w is the photographing view angle of the monitor camera 201 and w' is an angle at which the photographing view angle is projected on a horizontal plane.   The angle w' can be obtained by the equation indicated by Expression 3 below.
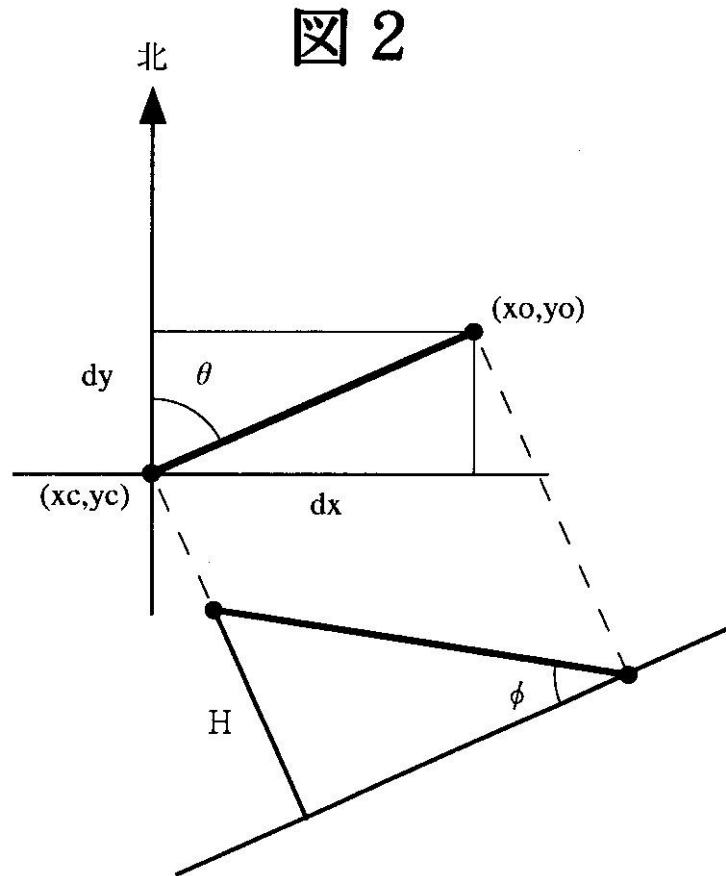[0045]
[Expression 3]

数 3

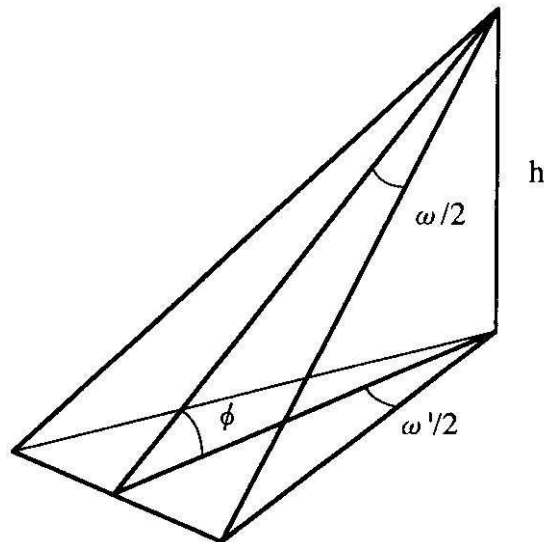$$w' = 2\tan^{-1}\left(\frac{1}{\cos\phi} \cdot \tan\frac{\omega}{2}\right)$$

"

B   "[FIG. 2]

図 2

"

C   "[FIG. 3]

図 3

"
(2) Art described in Cited Document 2

According to the above, it can be recognized that Cited Document 2 describes the following art:

"Art for calculating the photographing range of a camera on the basis of the installation point (xc, yc), pan angle θ, and tilt angle φ of the camera that has performed photographing, the installation height H of the camera, and the photographing view angle w of the camera"

3. Cited Document 3
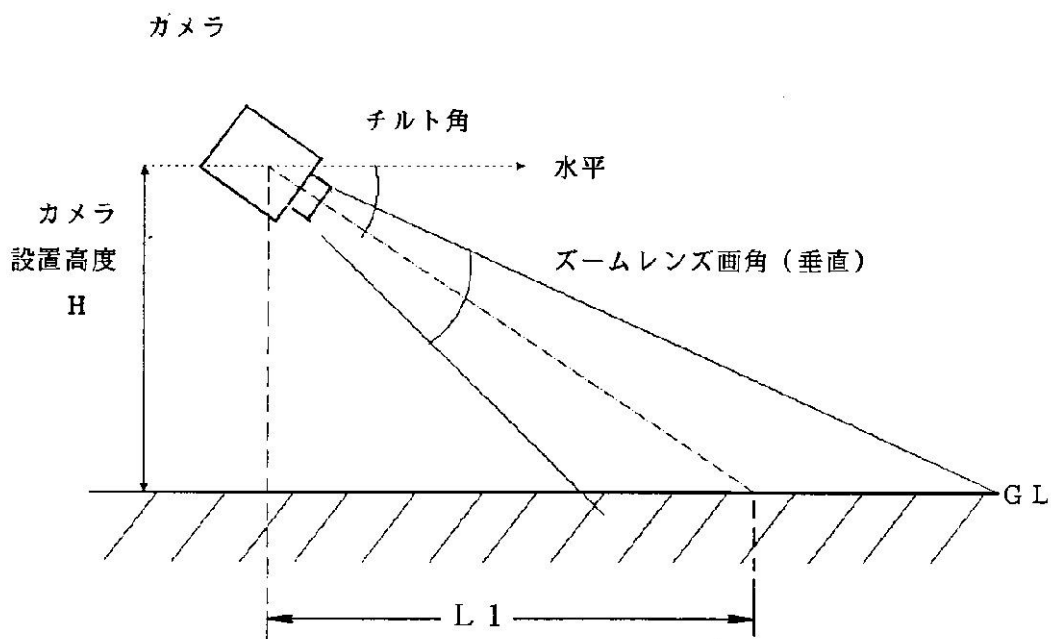(1) Described matters in Cited Document 3

Japanese Unexamined Patent Application Publication No. H6-284330 that is Cited Document 3 cited in the reasons for refusal of the examiner's decision describes the following matters with drawings with regard to "Monitor Camera Controller Linked with Map Information" (title of the invention).

Underlines are added by the body for emphasis.

A   "[0028] The camera installation position 16 in this figure is preregistered in an arithmetic controller 3 since the camera is fixedly installed, so as to perform display on the map.   In addition, a boundary line indicating the photographing range 17 of the camera is calculated and displayed from information indicating the camera horizontal angle (pan), the camera vertical angle (tilt), and zoom of the camera, which is input from the camera platform controller 5, and from the preregistered camera installation height value and the scale of a display map.   The boundary line indicating the photographing range 17 of the camera is generated as a computer image and is displayed together with computer images such as other map information pieces on an

identical screen on the video composition device 9."

B   "[FIG. 3]

カ メ ラ　Camera
設置高度　　　　　　Installation height
チ ル ト 角　　　　　Tilt angle
水平　Horizontal
ズームレンズ画角（垂直）　　　　　Zoom lens face angle (vertical)"

(2) Art described in Cited Document 3
　　　According to the above, it can be recognized that Cited Document 3 describes the following art:
"Art for calculating the photographing range of a camera on the basis of information indicating the installation position, horizontal angle, vertical angle, and zoom of the camera that has performed photographing, and the camera installation height value"

No. 5 Comparison
　　　Then, the Invention and Cited Invention are compared.

1 Regarding constitution A of the Invention

"Executing photographing by the camera" in the constitution a of the Cited Invention corresponds to "executing an imaging process" in the Invention.

In addition, it is common for a user to instruct a camera to perform photographing (that is, to request photographing) when the user executes photographing by using the camera; and it is obvious to a person skilled in the art that this means that when viewed from the side of a program for controlling photographing, it executes a photographing process upon detection of a photographing request.
(For information on the program, refer to the section of "5 Regarding constitution E in the Invention" below.)

Thus, the Invention and Cited Invention are in correspondence in terms of "executing an imaging process when an imaging request is detected."

2 Regarding constitution B of the Invention

In the Cited Invention, the camera is included in the terminal device as described in constitution a.   Therefore, "the latitude and longitude of the camera," "the rotation around the Z axis, κ (yaw)," and "the rotation around the X axis, ω (pitch)" in constitution b of the Cited Invention correspond to "a location of a terminal apparatus," "imaging orientation," and "elevation angle," respectively in the Invention.

In addition, regarding the "elevation" of the "camera" in the constitution b of the Cited Invention and the "a height of the terminal apparatus from the ground" in the Invention, they are identical in terms of both indicating a height; however, "elevation" is a word meaning the height from the mean sea level and therefore, they are different in that the surface as a reference of the height is a "mean sea level" or "ground."

Further, the Cited Invention is, as described in constitution b, constitution c, and constitution d, such that a virtual space image is superimposed on a real space image by using an arbitrary coordinate system which is defined from "the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.);" and therefore, it is obvious to a person skilled in the art that the latitude, longitude, and elevation of the camera, the rotation around the Z axis, κ (yaw), and the rotation around the X axis, ω (pitch), which are used here, are those at the time of executing photographing.

Therefore, the Invention and Cited Invention are in correspondence in terms of using "a location, imaging orientation and an   elevation angle of a terminal apparatus and a height of the terminal apparatus when the imaging process is executed."

However, they are different from each other in that the processing of "specifying an imaging range" is performed on the basis of information on the position and orientation of the terminal device in the Invention, whereas the processing of "specifying an imageing range" on the basis of information on the position and orientation of the terminal device is not performed in the Cited Invention.

In addition, they are different from each other in that as for the height of the terminal apparatus, it is "a height from the ground" in the Invention, whereas it is an elevation; that is, a height above mean sea level, in the Cited Invention.

3 Regarding constitution C of the Invention

In the Cited Invention, the processing of "specifying an area corresponding to a

plot of land in a captured imaged based on the imaging range being specified" is not performed, and therefore, the Invention and the Cited Invention are different from each other in this point.

4 Regarding constitution D of the Invention

"Obtaining space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area" in constitution c in the Cited Invention corresponds to "reading out boundary line information of the plot of land corresponding to latitude and longitude information from a storage part" in the Invention.

In addition, since the Cited Invention is, as in constitution c, to obtain space information that represents the boundary of a plot of land, "creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, superimposing the created virtual space image on a real space image at an actually existing position on the monitor, and displaying it on the monitor" of constitution d in the Cited Invention corresponds to "generating an image by overlapping with the boundary line information being read out; and displaying the image at a display device" in the Invention.

Therefore, the Invention and Cited Invention are in correspondence in terms of "reading out boundary line information of the plot of land corresponding to latitude and longitude information from a storage part" and "generating an image by overlapping the area being specified with the boundary line information being read out; and displaying theimage at a display device."

However, as for the processing of generating a superimposed image, by overlappingd "the area being specified" in the Invention, whereas in the Cited Invention, an area corresponding to a plot of land is not specified as described in 3 above. In the Cited Invention, the processing is performed by "defining an arbitrary coordinate system on the monitor by grasping how the real space coordinates of the existing object represented by the real space image are being displayed on the monitor from the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.)" (constitution b), "obtaining space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area" (constitution c), and "creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, superimposing the created virtual space image on a real space image at an actually existing position on the monitor" (constitution d). Therefore, the inventions are different from each other in the point described above.

5 Regarding constitution E of the Invention

Since the "image composition program" of constitution e in the Cited Invention is for superimposing a boundary of a plot of land on a real space image and displaying it, it can be said to be a land boundary display program.

Therefore, the "an image composition program" of the Cited Invention corresponds to the "a land boundary display program" of the Invention.

6 Summary
　　According to the above, the Invention and Cited Invention are in correspondence and different in the following points:

[Corresponding features]
　　A land boundary display program that makes a computer execute the processing of:
　executing an imaging process when an imaging request is detected;
　specifying an image range based on a location, an imaging orientation and elevation angle of a terminal apparatus and a height of the terminal apparatus when the imaging process is executed; and
　reading out boundary line information of the plot of land corresponding to latitude and longitude information from a strage part; generating an image by overlapping with the boundary line information being read out; and displaying the imageat a display device.

[Different features]
(Different feature 1) As for the processing for generating a superimposed image, in the Invention, it is performed by "specifying an imaging range" based on the a location, an imaging orientation and an elevation angle of the terminal apparatus, "specifying an area corresponding to a plot of land in a captured imaged based on the imaging range being specified," and generating an image by overlapping "the area being specified" with the boundary line information being read out; whereas, in the Cited Invention, it is performed by "defining an arbitrary coordinate system on the monitor by grasping how the real space coordinates of the existing object represented by the real space image are being displayed on the monitor from the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.)," "obtaining space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area," and "creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, and superimposing the created virtual space image on a real space image at an actually existing position on the monitor," thereby generating a superimposed image.

(Different feature 2) As for a height of the terminal appatus, it is "a height from the ground" in the Invention, whereas it is an elevation; that is, a height above mean sea level in the Cited Invention.

No 6 Judgment
　　The different features are examined below.

1 Regarding different feature 1
(1) The Cited Invention is, as identified in No. 4, 1, (2) above, to execute the processing in constitution b and constitution c, and the processing of "creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, and superimposing the created virtual

space image on a real space image at an actually existing position on the monitor."

(2) Here, the "drawing range" in the Cited Invention is a range displayed on the monitor and this range corresponds to a range photographed by a camera; and therefore, it is obvious to a person skilled in the art that it is necessary to specify the photographing range of the camera so as to specify a "drawing range" also in the Cited Invention.

(3) In addition, the Cited Invention is for "obtaining space information in the drawing range of the monitor" and "arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor;" and it is obvious to a person skilled in the art that in order to implement such processing, it is necessary to determine whether space information of a space model representing the boundary of a plot of land which is stored in a database within a storage area is included within the drawing range (the photographing range of a camera); that is, to specify whether an area corresponding to the plot of land exists within the photographing range.

(4) Further, the Cited Invention is for "superimposing the created virtual space image on a real space image at an actually existing position on the monitor" and therefore, it is obvious to a person skilled in the art that a boundary of a plot of land is superimposed at an actually existing position on the monitor; that is, on an area corresponding to a specified plot of land also in the Cited Invention.

(5) Therefore, the constitution according to the above different feature 1 in the Cited Invention; that is, the processing for generating an image which is obtained by "defining an arbitrary coordinate system on the monitor by grasping how the real space coordinates of the existing object represented by the real space image are being displayed on the monitor from the real space coordinates of the camera, the posture of the camera, and the specifications of the camera (view angle, focal distance, etc.)," "obtaining space information in the drawing range of the monitor out of space information that represents the boundary of a plot of land corresponding to the latitude and longitude, from a space model stored in the database within the storage area," and "creating a virtual space image by arranging a virtual space model obtained from the obtained space information in the arbitrary coordinate system on the monitor, and superimposing the created virtual space image on a real space image at an actually existing position on the monitor" is not substantially different from the processing of "specifying an imaging range" based on a location, imaging orientation and an elevation angle of the terminal device, "specifying an area corresponding to a plot of land in a captured image on the imaging range being specified," and overlapping "the area being specified" with the boundary line information being read out; in the Invention.

2 Regarding different feature 2
　　　As described in the section of "1 Regarding the different feature 1" above, it is obvious to a person skilled in the art that it is necessary to specify the photographing range of a camera also in the Cited Invention, and it is just a well-known art to use "a height from the ground" for a height of a terminal device in specifying the photographing range of a camera as shown in Cited Document 2, Cited Document 3, etc. In addition, how a height of a terminal device is defined in the Cited Invention is only a

design matter which can be appropriately defined by a person skilled in the art and therefore, in the Cited Invention, a person skilled in the art can define a height of a terminal device as "a height from the ground" as in the Invention.

3 Regarding effects and the like

The constitutions of the Invention could have been easily conceived by a person skilled in the art as mentioned above, and the effect exerted by the Invention is in a range that can be easily predicted by a person skilled in the art from the constitutions in question that could have been easily conceived, and is not remarkable to the extent that exceeds that range.

4 Summary

As described above, the Invention could have been easily made by a person skilled in the art based on the invention described in Cited Document 1 and well-known arts.

No. 7 Closing

As described above, the Invention could have been easily made by a person skilled in the art based on the invention described in Cited Invention 1 and well-known arts; thus, the appellant should not be granted a patent for the Invention in accordance with the provisions of Article 29(2) of the Patent Act.

Accordingly, the present application should be rejected without examining other claims.

Therefore, the appeal decision shall be made as described in the conclusion.

May 28, 2018

Chief administrative judge: TORII, Minoru
Administrative judge: BANDO, Daigoro
Administrative judge: SHIMIZU, Masakazu