US 20170206048A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2017/0206048 A1**

LIU et al. (43) **Pub. Date: Jul. 20, 2017**

(54) **CONTENT SHARING METHODS AND APPARATUSES**

(71) Applicant: **Beijing Zhigu Rui Tuo Tech Co., Ltd**, Beijing (CN)

(72) Inventors: **Jia LIU**, Beijing (CN); **Wei SHI**, Beijing (CN)

(21) Appl. No.: **15/326,443**

(22) PCT Filed: **Jun. 5, 2015**

(86) PCT No.: **PCT/CN2015/080852**

§ 371 (c)(1),
(2) Date: **Jan. 13, 2017**

(30) **Foreign Application Priority Data**

Jul. 18, 2014 (CN) 2014103450698

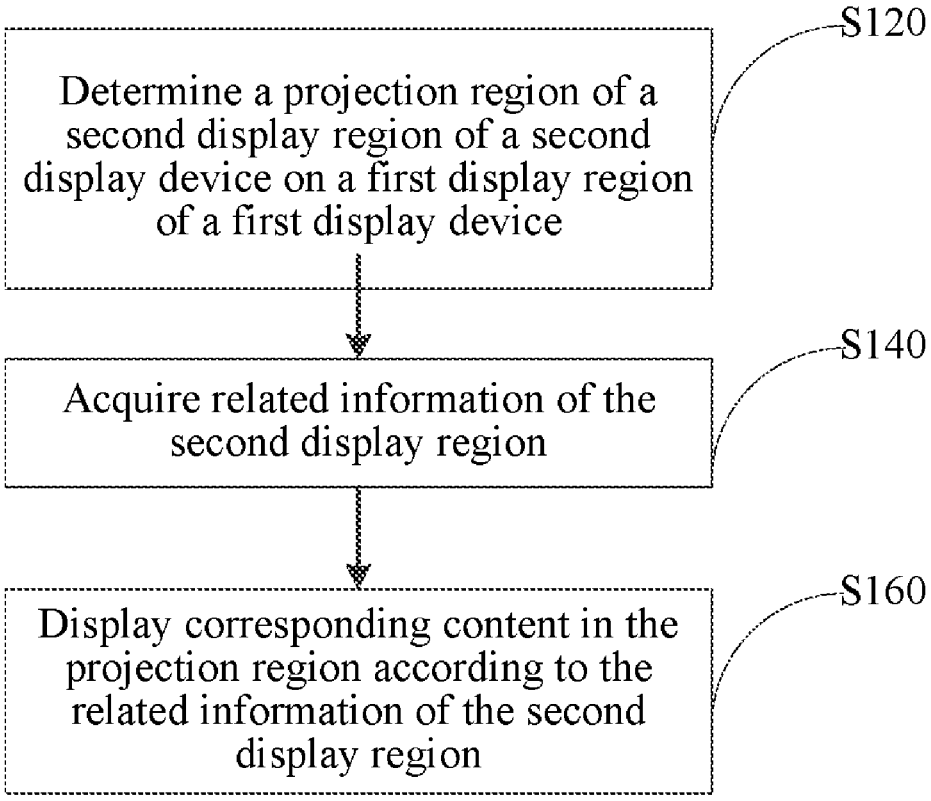
Publication Classification

(51) **Int. Cl.**
G06F 3/147 (2006.01)
G06F 3/14 (2006.01)

(52) **U.S. Cl.**
CPC ***G06F 3/147*** (2013.01); ***G06F 3/1423*** (2013.01)

(57) **ABSTRACT**

Content sharing methods and apparatuses are provided that relate to the field of communications. A method comprises: determining a projection region of a second display region of a second display device on a first display region of a first display device; acquiring related information of the second display region; and displaying corresponding content in the projection region according to the related information of the second display region. The methods and apparatuses can simplify content sharing steps, improve content sharing efficiency and/or enhance user experience.



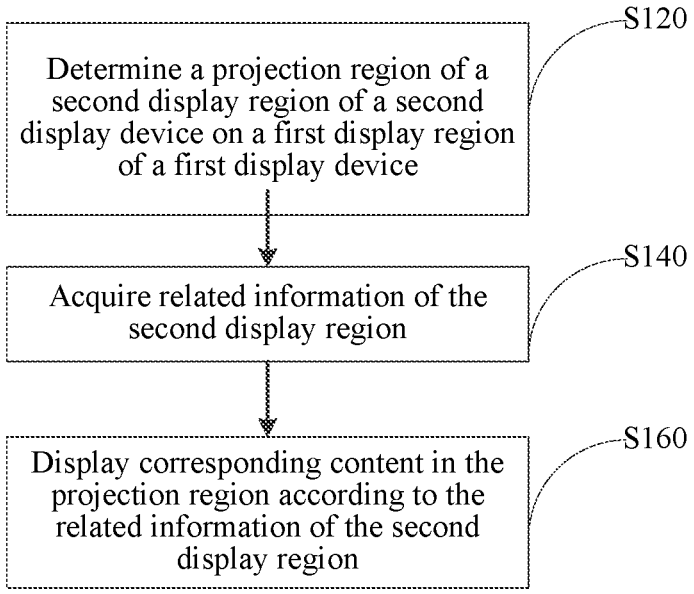

S120
Determine a projection region of a second display region of a second display device on a first display region of a first display device
S140
Acquire related information of the second display region
S160
Display corresponding content in the projection region according to the related information of the second display region

FIG. 1

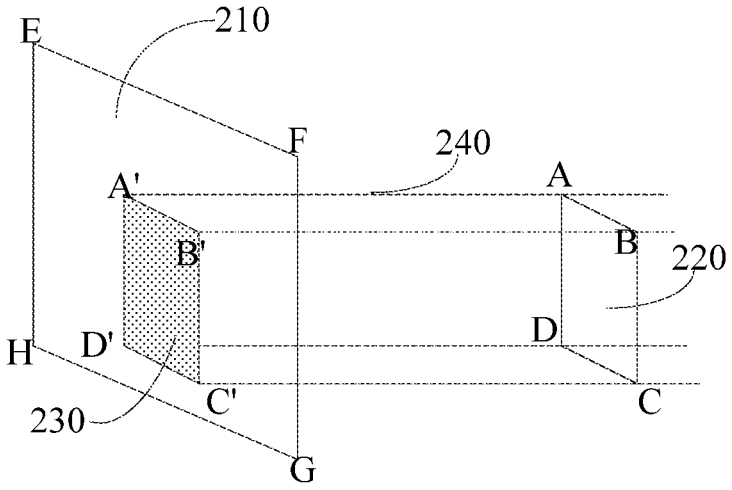

E
210
F
240
A'
A
B'
B
220
D'
D
H
230
C'
C
G

FIG. 2

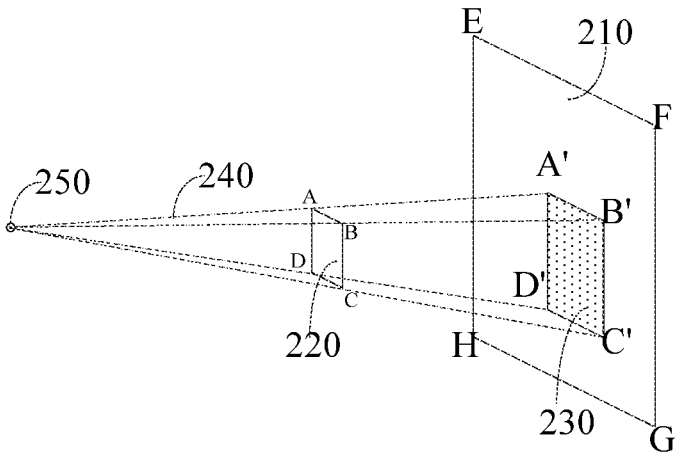


FIG. 3

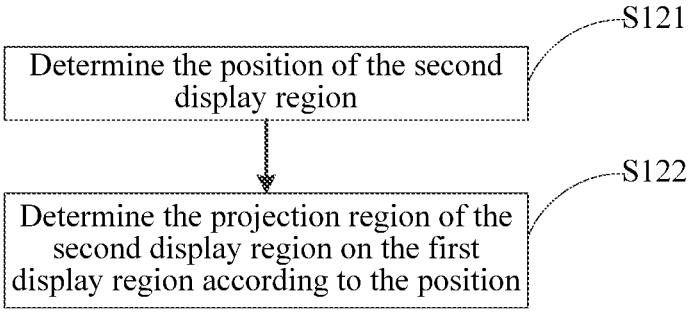


FIG. 4

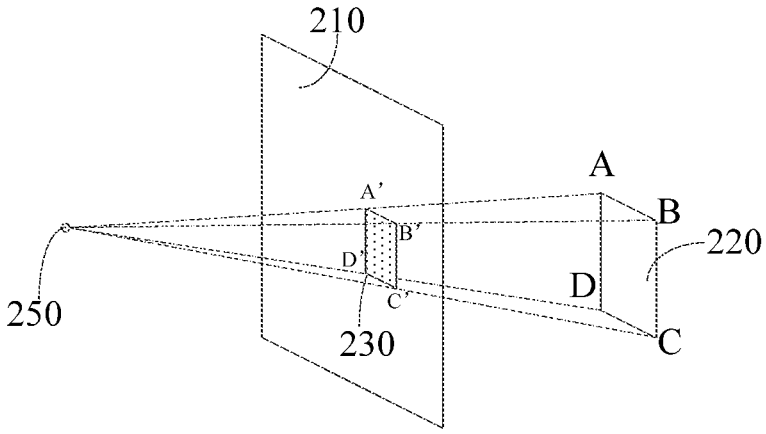


FIG. 5

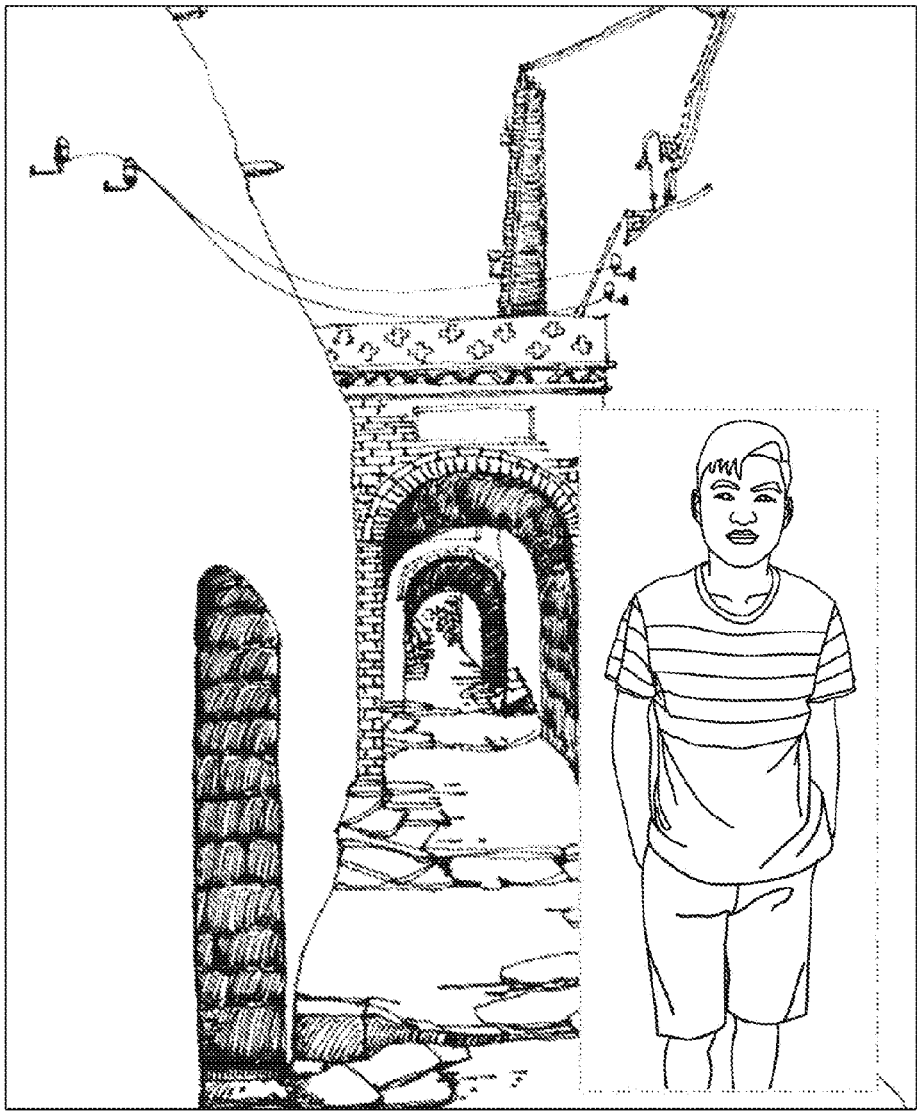


FIG. 6

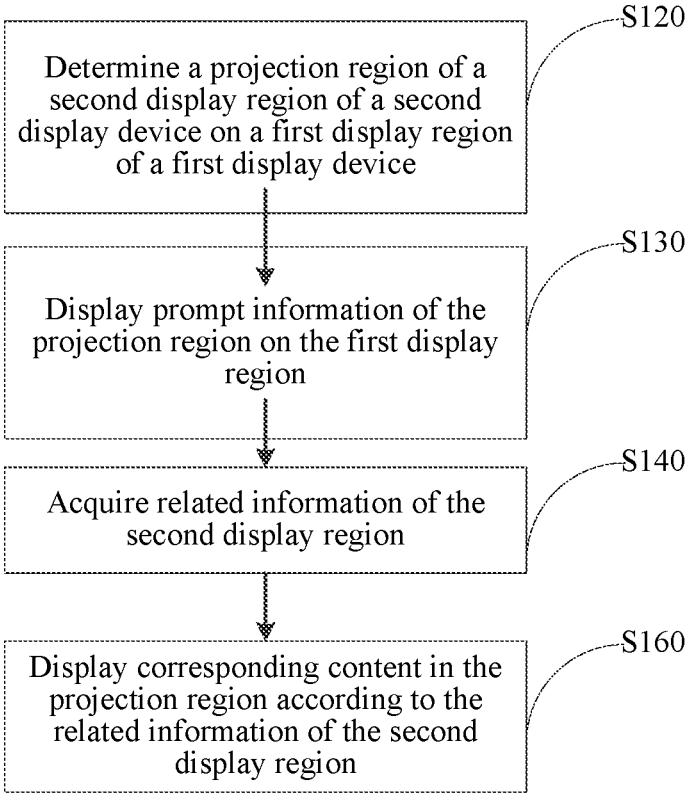

S120
Determine a projection region of a second display region of a second display device on a first display region of a first display device
S130
Display prompt information of the projection region on the first display region
S140
Acquire related information of the second display region
S160
Display corresponding content in the projection region according to the related information of the second display region

FIG. 7

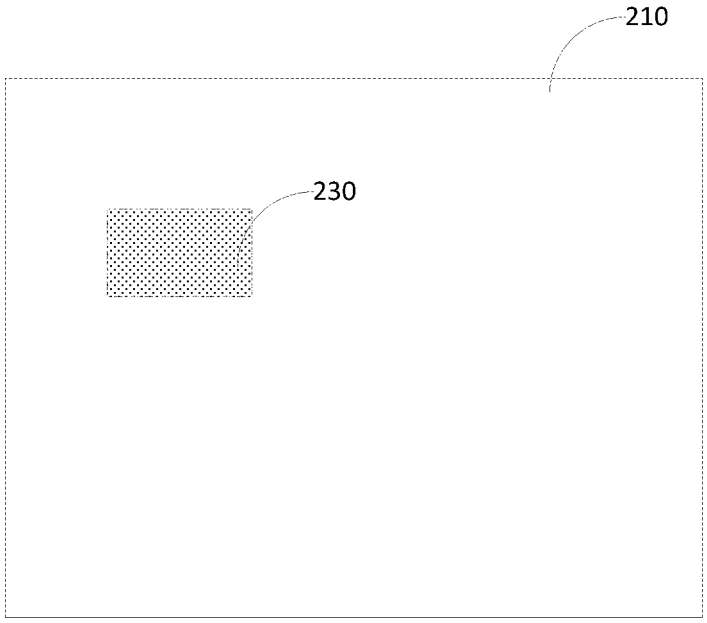


FIG. 8

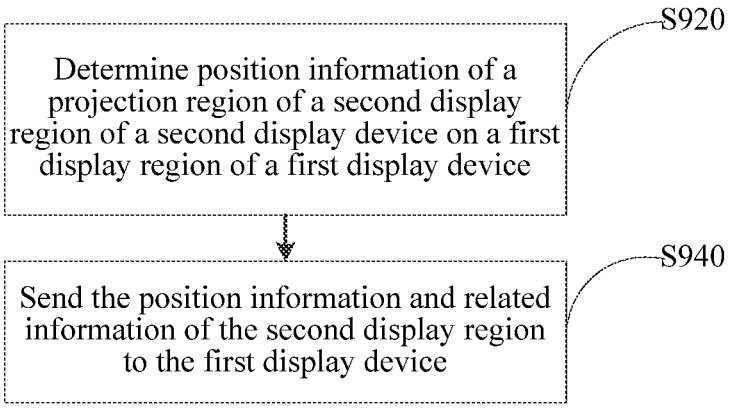

S920
Determine position information of a projection region of a second display region of a second display device on a first display region of a first display device
S940
Send the position information and related information of the second display region to the first display device

FIG. 9

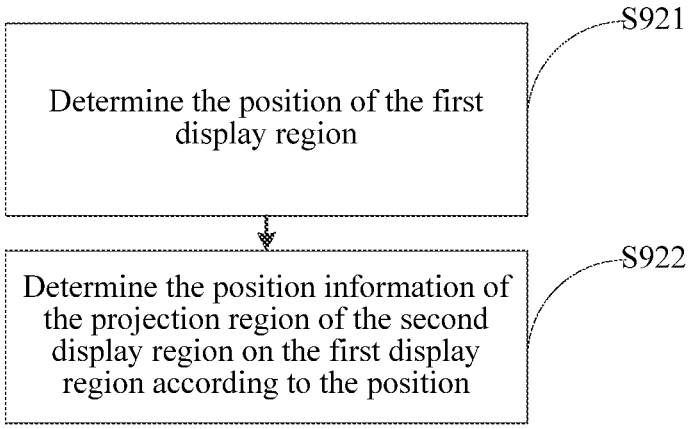

S921
Determine the position of the first display region
S922
Determine the position information of the projection region of the second display region on the first display region according to the position

FIG. 10

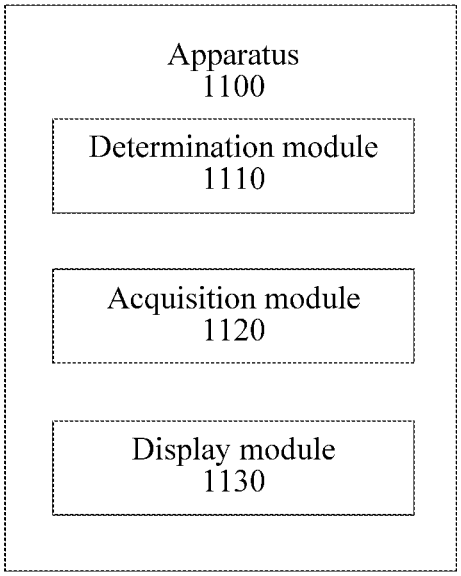

Apparatus
1100
Determination module
1110
Acquisition module
1120
Display module
1130

FIG. 11

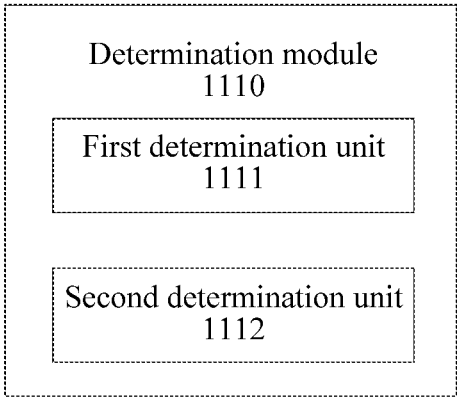

Determination module
1110
First determination unit
1111
Second determination unit
1112

FIG. 12

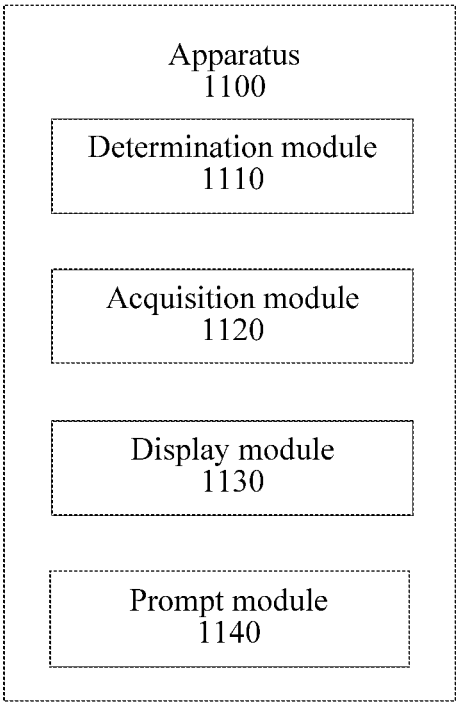

Apparatus
1100
Determination module
1110
Acquisition module
1120
Display module
1130
Prompt module
1140

FIG. 13

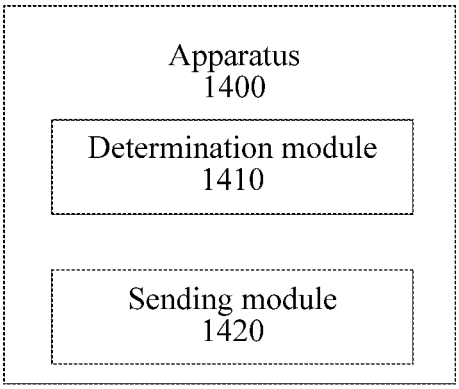

Apparatus
1400
Determination module
1410
Sending module
1420

FIG. 14

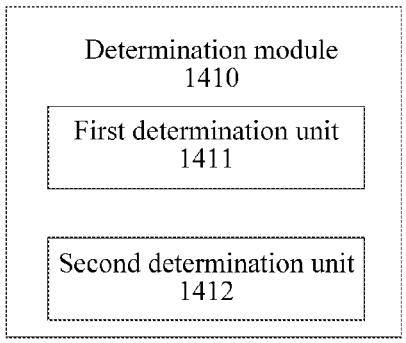

Determination module
1410
First determination unit
1411
Second determination unit
1412

FIG. 15

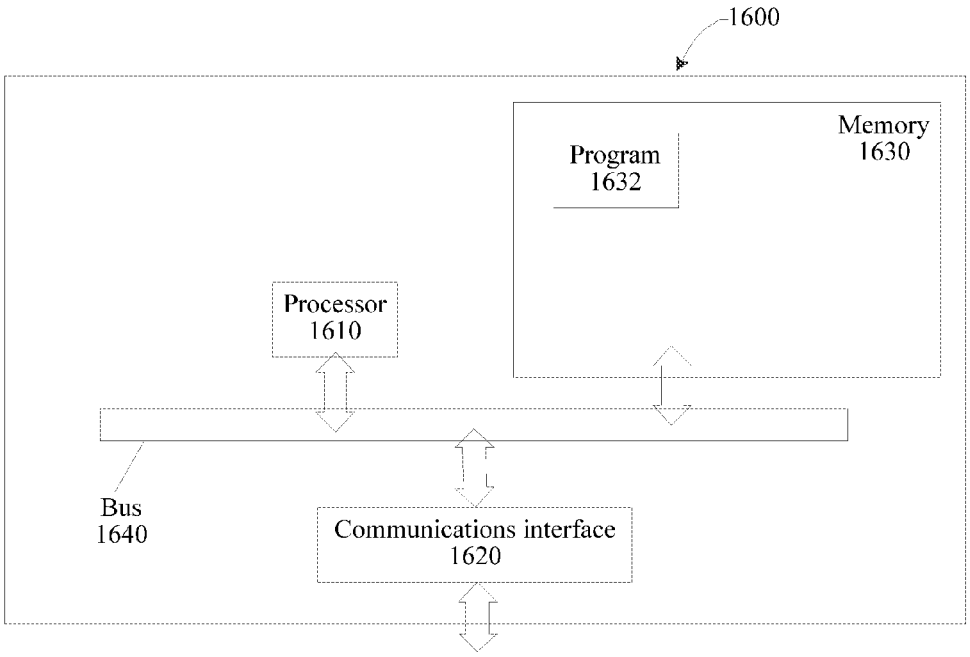

1600
Memory
1630
Program
1632
Processor
1610
Bus
1640
Communications interface
1620

FIG. 16

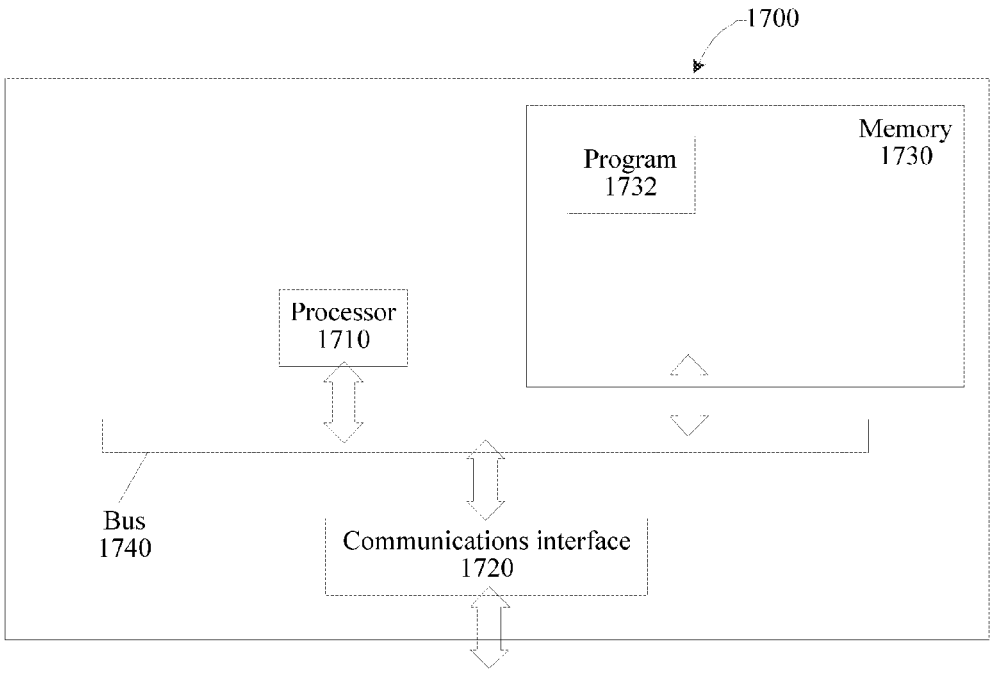

1700
Memory
1730
Program
1732
Processor
1710
Bus
1740
Communications interface
1720

FIG. 17

CONTENT SHARING METHODS AND APPARATUSES

RELATED APPLICATION

[0001] The present international patent cooperative treaty (PCT) application claims the benefit of priority to Chinese Patent Application No. 201410345069.8, filed on Jul. 18, 2014, and entitled "Content Sharing Method and Apparatus", which is hereby incorporated into the present international PCT application by reference herein in its entirety.

TECHNICAL FIELD

[0002] The present application relates to the field of communications, and in particular, to content sharing methods and apparatuses.

BACKGROUND

[0003] With development of technologies, new display devices such as near-to-eye display devices (for example, smart glasses) and transparent screens constantly emerge, and users have more abundant and more convenient content display ways. Display interaction and content sharing between different display devices will provide greater convenience for users.

[0004] Generally, sharing display content from a display device A to a display device B and displaying corresponding content in a particular region of the device B comprises the following steps: 1) establishing a communication connection between the device A and the device B; 2) sending, by the device A, the display content to the device B; 3) receiving, by the device B, the display content; and 4) displaying, by the user, corresponding content in a particular region through a corresponding operation (for example, image stitching) on the device B. The process has tedious steps, takes more time and has poor user experience.

SUMMARY

[0005] The following presents a simplified summary of the disclosed subject matter in order to provide a basic understanding of some aspects of the disclosed subject matter. This summary is not an extensive overview of the disclosed subject matter. It is intended to neither identify key or critical elements of the disclosed subject matter nor delineate the scope of the disclosed subject matter. Its sole purpose is to present some concepts of the disclosed subject matter in a simplified form as a prelude to the more detailed description that is presented later.

[0006] An example, non-limiting objective of the present application is to provide a content sharing method and apparatus.

[0007] According to one aspect of at least one example embodiment of the present application, a content sharing method is provided, the method comprising:

[0008] determining a projection region of a second display region of a second display device on a first display region of a first display device;

[0009] acquiring related information of the second display region; and

[0010] displaying corresponding content in the projection region according to the related information of the second display region.

[0011] According to another aspect of the at least one example embodiment of the present application, a content sharing method is provided, the method comprising:

[0012] determining position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

[0013] sending the position information and related information of the second display region to the first display device.

[0014] According to another aspect of the at least one example embodiment of the present application, a content sharing apparatus is provided, the apparatus comprising:

[0015] a determination module, configured to determine a projection region of a second display region of a second display device on a first display region of a first display device;

[0016] an acquisition module, configured to acquire related information of the second display region; and

[0017] a display module, configured to display corresponding content in the projection region according to the related information of the second display region.

[0018] According to another aspect of the at least one example embodiment of the present application, a content sharing apparatus is provided, the apparatus comprising:

[0019] a determination module, configured to determine position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

[0020] a sending module, configured to send the position information and related information of the second display region to the first display device.

[0021] The content sharing methods and apparatuses according to the example embodiments of the present application can simplify content sharing steps, improve content sharing efficiency and/or enhance user experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. **1** is a flowchart of the content sharing method according to one example embodiment of the present application;

[0023] FIG. **2** is a schematic diagram of the orthographic projection region in one example embodiment of the present application;

[0024] FIG. **3** is a schematic diagram of the central projection region in one example embodiment of the present application;

[0025] FIG. **4** is a flowchart of step S**120** in one example embodiment of the present application;

[0026] FIG. **5** is a schematic diagram of the central projection region in another example embodiment of the present application;

[0027] FIG. **6** is a schematic diagram of display effects of the first display region in one example embodiment of the present application;

[0028] FIG. **7** is a flowchart of the content sharing method in another example embodiment of the present application;

[0029] FIG. **8** is a schematic diagram of the prompt information in one example embodiment of the present application;

[0030] FIG. **9** is a flowchart of the content sharing method according to another example embodiment of the present application;

[0031] FIG. **10** is a flowchart of step S**920** in one example embodiment of the present application;

[0032] FIG. **11** is a schematic diagram of a modular structure of the content sharing apparatus according to one example embodiment of the present application;

[0033] FIG. **12** is a schematic diagram of a modular structure of the determination module in one example embodiment of the present application;

[0034] FIG. **13** is a schematic diagram of a modular structure of the content sharing apparatus in one example embodiment of the present application;

[0035] FIG. **14** is a schematic diagram of a modular structure of the content sharing apparatus according to another example embodiment of the present application;

[0036] FIG. **15** is a schematic diagram of a modular structure of the determination module in one example embodiment of the present application;

[0037] FIG. **16** is a schematic diagram of a hardware structure of the content sharing apparatus according to one example embodiment of the present application; and

[0038] FIG. **17** is a schematic diagram of a hardware structure of the content sharing apparatus according to another example embodiment of the present application.

DETAILED DESCRIPTION

[0039] Example embodiments of the present application are described in detail hereinafter with reference to the accompanying drawings and embodiments. The following embodiments are intended to describe the present application, but not to limit the scope of the present application.

[0040] It should be understood by those skilled in the art that, in the embodiments of the present application, the value of the serial number of each step described above does not mean an execution sequence, and the execution sequence of each step should be determined according to the function and internal logic thereof, and should not be any limitation of the embodiments of the present application.

[0041] FIG. **1** is a flowchart of the content sharing method according to one embodiment of the present application. The method may be implemented on, for example, a content sharing apparatus. As shown in FIG. **1**, the method comprises:

[0042] S**120**: determining a projection region of a second display region of a second display device on a first display region of a first display device;

[0043] S**140**: acquiring related information of the second display region; and

[0044] S**160**: displaying corresponding content in the projection region according to the related information of the second display region.

[0045] The content sharing method according to this embodiment of the present application determines a projection region of a second display region of a second display device on a first display region of a first display device, acquires related information of the second display region, and then displays corresponding content in the projection region according to the related information of the second display region, that is to say, a user can display content corresponding to the related information of the second display region at the projection region only by adjusting the position of the first display device or the second display device, thereby simplifying content sharing steps, improving content sharing efficiency and enhancing user experience.

[0046] The functions of steps S**120**, S**140** and S**160** will be described below in detail in combination with example embodiments.

[0047] S**120**: Determine a projection region of a second display region of a second display device on a first display region of a first display device.

[0048] The first display region of the first display device may be greater than the second display region of the second display device, for example, the first display device may be a transparent tablet computer, and the second display device may be a smart phone or the like.

[0049] Referring to FIG. **2**, in one example embodiment, the projection region **230** is an orthographic projection region, that is, a projection line **240** is perpendicular to a projection plane (the plane where the first display region **210** is). Suppose that the first display region **210** and the second display region **220** are both rectangular, the projection region **230** of the second display region **220** on the first display region **210** is as shown in FIG. **2**.

[0050] Referring to FIG. **3**, in another example embodiment, the projection region **230** may be a central projection region, that is, a region formed by connecting points of intersection between a reference point **250** and a projection line **240** and a projection plane (the plane where the first display region **210** is) of the second display region **220**. Suppose that the first display region **210** and the second display region **220** are both rectangular, the projection region **230** of the second display region **220** on the first display region **210** is as shown in FIG. **3**. The reference point **250** can be preset, or determined according to a user input instruction.

[0051] Referring to FIG. **4**, in one example embodiment, step S**120** may comprise:

[0052] S**121**: determining the position of the second display region; and

[0053] S**122**: determining the projection region of the second display region on the first display region according to the position.

[0054] In step S**121**, the position of the second display region can be determined through communication with the second display device, for example, receiving visible light information or sound wave information sent by vertices A, B, C and D of the second display region **220**.

[0055] In one example embodiment, the projection region can be determined based on the principle of orthographic projection in step S**122**. By still taking FIG. **2** as an example, suppose that positions of the four vertices A, B, C and D of the second display region **220** have been determined, according to the principle of orthographic projection, corresponding four projection points A', B', C' and D' of the vertices A, B, C and D on the first display region **210** can be obtained, and the projection region **230** can be obtained by connecting the four projection points A', B', C' and D'.

[0056] In another example embodiment, the projection region can be determined based on the principle of central projection in step S**122**. By still taking FIG. **3** as an example, suppose that positions of the four vertices A, B, C and D of the second display region **220** have been determined and the position of the reference point **250** has been pre-determined, according to the principle of central projection, corresponding four projection points A', B', C' and D' of the vertices A, B, C and D on the first display region **210** can be obtained, and the projection region **230** can be obtained by connecting the four projection points A', B', C' and D'.

[0057] In addition, the position relation between the first display region **210** and the second display region **220** is not limited to the position relation shown in FIG. **3**. In another example embodiment, as shown in FIG. **5**, the first display region **210** may also be located between the second display region **220** and the reference point **250**. In this case, the projection region **230** can be determined also according to the principle of central projection. Moreover, in this case, the reference point **250** may correspond to the position of eyes of the user, and the first display region **210** may be a virtual display region, for example, a display region projected by a pair of smart glasses in front of the eyes of the user, that is, a virtual display region relative to at least one eye of the user.

[0058] In the event that the reference point **250** corresponds to eyes of the user, the position of the eyes can be preset, or the position of the eyes can be acquired by photographing an image of the eyes and in combination with image processing.

[0059] S**140**: Acquire related information of the second display region.

[0060] In this step, the related information of the second display region can be acquired through communication with the second display device.

[0061] In one example embodiment, the related information of the second display region comprises: display content of the second display region. The display content may be an image, a map, a document, an application window or the like.

[0062] In another example embodiment, the related information of the second display region comprises: display content of the second display region, and associated information of the display content. For example, if the display content of the second display region is a local map of a certain city, the associated information may comprise views of different enlarged scales of the local map. Thus, after obtaining the related information of the projection region, the user can perform a zooming operation on the local map on the first display device.

[0063] In another example embodiment, the related information of the second display region comprises: coordinate information of display content of the second display region. For example, if a local map of a certain city is displayed in the second display region, the coordinate information is coordinate information (that is, latitude and longitude information) of two diagonal vertices (suppose that the second display region is rectangular) of the local map, and according to the coordinate information, the first display device can take a screenshot of the local map on a map stored locally and display the local map to the user in the projection region.

[0064] S**160**: Display corresponding content in the projection region according to the related information of the second display region.

[0065] The content displayed in the projection region corresponds to the related information of the second display region.

[0066] In the event that the related information of the second display region is the display content of the second display region, the content displayed in the projection region is the display content of the second display region. For example, if the related information of the second display region is a character picture, in this step, the character picture will be displayed in the projection region. Suppose that a scenery picture is displayed in the first display region, in this step, the effect of image stitching shown in FIG. **6** will be achieved; the region encircled by a dotted box in FIG. **6** indicates the character picture, and the region encircled by a solid-line box indicates the scenery picture.

[0067] In the event that the related information of the second display region comprises display content of the second display region and associated information of the display content, the content displayed in the projection region is the display content of the second display region, and the associated information of the display content can be displayed according to a user instruction. For example, if the display content of the second display region is a city map and the associated information is views in different enlarged scales, in this step, the city map can be displayed in the projection region, and the city map can be zoomed within the range of the projection region according to the user instruction, that is, views in different scales are displayed.

[0068] In the event that the related information of the second display region is coordinate information of a map displayed in the second display region, in this step, the first display device can download the corresponding map according to the coordinate information, and displays the map corresponding to the coordinate information in the projection region.

[0069] In order to better guide the user to adjust the position of the first display device or the second display device to make the projection region located in a region desired by the user, referring to FIG. **7** in one example embodiment, the method may further comprise:

[0070] S**130**: displaying prompt information of the projection region on the first display region.

[0071] Referring to FIG. **8**, the prompt information may be a dotted box displayed on the first display region **210**, and a region encircled by the dotted box is the projection region **230**. In response to that the user adjusts the position of the first display device or the second display device, that is, relative positions of the first display device and the second display device are adjusted, the dotted box will change its position on the first display region **210**, and thus the user can adjust the position of the projection region on the first display region **210** more conveniently.

[0072] In addition, the embodiment of the present application further provides a computer readable medium, comprising a computer readable instruction that performs the following operations when being executed: executing the operations of step S**120**, S**140** and S**160** of the method in the example embodiment shown in FIG. **1**.

[0073] To sum up, according to the method in the embodiment of the present application, a projection region of a second display region of a second display device on a first display region of a first display device can be determined, then corresponding content is displayed in the projection region according to related information of the second display region, and prompt information can be displayed to prompt a user to adjust relative positions of the first display device and the second display device, so as to help the user to adjust the position of the projection region on the first display region, thus simplifying an operation step of sharing a part of display content on the second display device to a predetermined display region of the first display device, improving content sharing efficiency and enhancing user experience.

[0074] FIG. **9** is a flowchart of the content sharing method according to another embodiment of the present application;

the method may be implemented, for example, on a content sharing apparatus; as shown in FIG. **9**, the method may comprise:

[0075] S**920**: determining position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

[0076] S**940**: sending the position information and related information of the second display region to the first display device.

[0077] The content sharing method according to the embodiment of the present application determines position information of a projection region of a second display region of a second display device on a first display region of a first display device and sends the position information and related information of the second display region to the first display device, and then the first display device can display corresponding content in the projection region, thus simplifying content sharing steps, improving content sharing efficiency and enhancing user experience.

[0078] The functions of steps S**920** and S**940** will be described below in detail in combination with example embodiments.

[0079] S**920**: Determine position information of a projection region of a second display region of a second display device on a first display region of a first display device.

[0080] The first display region of the first display device may be greater than the second display region of the second display device, for example, the first display device may be a transparent tablet computer, and the second display device may be a smart phone or the like.

[0081] Referring to FIG. **2**, in one example embodiment, the projection region **230** is an orthographic projection region, that is, a projection line **240** is perpendicular to a projection plane (the plane where the first display region **210** is). Suppose that the first display region **210** and the second display region **220** are both rectangular, the projection region **230** of the second display region **220** on the first display region **210** is as shown in FIG. **2**.

[0082] Referring to FIG. **3**, in another example embodiment, the projection region **230** may be a central projection region, that is, a region formed by connecting points of intersection between a reference point **250** and a projection line **240** and a projection plane (the plane where the first display region **210** is) of the second display region **220**. Suppose that the first display region **210** and the second display region **220** are both rectangular, the projection region **230** of the second display region **220** on the first display region **210** is as shown in FIG. **3**. The reference point **250** can be preset, or determined according to a user input instruction.

[0083] Referring to FIG. **10**, in one example embodiment, step S**920** may comprise:

[0084] S**921**: determining the position of the first display region; and

[0085] S**922**: determining the position information of the projection region of the second display region on the first display region according to the position.

[0086] In step S**921**, the position of the first display region may be determined through communication with the first display device, for example, receiving visible light information or sound wave information sent by vertices E, F, G and H of the first display region **210**.

[0087] In one example embodiment, the projection region may be determined based on the principle of orthographic projection in step S**922**. By still taking FIG. **2** as an example, suppose that the position of the first display region **210** has been determined, according to the principle of orthographic projection, corresponding four projection points A', B', C' and D' of the vertices A, B, C and D on the first display region **210** can be obtained, and the projection region **230** can be obtained by connecting the four projection points A', B', C' and D'.

[0088] In another example embodiment, the projection region can be determined based on the principle of central projection in step S**122**. By still taking FIG. **3** as an example, suppose that the position of the first display region **210** has been determined and the position of the reference point **250** has been pre-determined, according to the principle of central projection, corresponding four projection points A', B', C' and D' of the vertices A, B, C and D on the first display region **210** can be obtained, and the projection region **230** can be obtained by connecting the four projection points A', B', C' and D'.

[0089] In addition, the position relation between the first display region **210** and the second display region **220** is not limited to the position relation shown in FIG. **3**. Referring to FIG. **5**, the first display region **210** may also be located between the second display region **220** and the reference point **250**. In this case, the projection region **230** can be determined also according to the principle of central projection. Moreover, in this case, the reference point **250** may correspond to the position of eyes of the user, and the first display region **210** may be a virtual display region, for example, a display region projected by a pair of smart glasses in front of the eyes of the user, that is, a virtual display region relative to at least one eye of the user.

[0090] In the event that the reference point **250** corresponds to eyes of the user, the position of the eyes can be preset, or the position of the eyes can be acquired by photographing an image of the eyes and in combination with image processing.

[0091] S**940**: Send the position information and related information of the second display region to the first display device.

[0092] The positioning information may be coordinate information configured to determine the projection region, for example, coordinate information of the projection points A', B', C' and D'.

[0093] In one example embodiment, the related information of the second display region comprises: display content of the second display region. The display content may be an image, a map, a document, an application window or the like.

[0094] In another example embodiment, the related information of the second display region comprises: display content of the second display region, and associated information of the display content. For example, if the display content of the second display region is a local map of a certain city, the associated information may comprise views of different enlarged scales of the local map. Thus, after obtaining the related information of the projection region, the user can perform a zooming operation on the local map on the first display device.

[0095] In another example embodiment, the related information of the second display region comprises: coordinate information of display content of the second display region. For example, if a local map of a certain city is displayed in the second display region, the coordinate information is coordinate information (that is, latitude and longitude information) of two diagonal vertices (suppose that the second display region is rectangular) of the local map, and according to the coordinate information, the first display device can take a screenshot of the local map on a map stored locally and display the local map to the user in the projection region.

[0096] In addition, the first display device can display corresponding content in the projection region according to the position information and the related information of the second display region. For example, suppose that the related information of the second display region is a character picture and a scenery picture is displayed in the first display region, the first display device will achieve the effect of image stitching shown in FIG. **6** in the first display region.

[0097] In addition, the embodiment of the present application further provides a computer readable medium, comprising a computer readable instruction that performs the following operations when being executed: executing the operations of step S**920** and S**940** of the method in the example embodiment shown in FIG. **9**.

[0098] FIG. **11** is a schematic diagram of a modular structure of the content sharing apparatus according to one embodiment of the present application; as shown in FIG. **11**, the apparatus **1100** may comprise:

[0099] a determination module **1110**, configured to determine a projection region of a second display region of a second display device on a first display region of a first display device;

[0100] an acquisition module **1120**, configured to acquire related information of the second display region; and

[0101] a display module **1130**, configured to display corresponding content in the projection region according to the related information of the second display region.

[0102] The content sharing apparatus according to this embodiment of the present application determines a projection region of a second display region of a second display device on a first display region of a first display device, acquires related information of the second display region, and then displays corresponding content in the projection region according to the related information of the second display region, that is to say, a user can display content corresponding to the related information of the second display region at the projection region only by adjusting the position of the first display device or the second display device, thereby simplifying content sharing steps, improving content sharing efficiency and enhancing user experience.

[0103] The content sharing apparatus can be integrated to the first display device as a functional module.

[0104] The functions of the determination module **1110**, the acquisition module **1120** and the display module **1130** will be described below in detail in combination with example embodiments.

[0105] A determination module **1110**, configured to determine a projection region of a second display region of a second display device on a first display region of a first display device.

[0106] The first display region of the first display device may be greater than the second display region of the second display device, for example, the first display device may be a transparent tablet computer, and the second display device may be a smart phone or the like.

[0107] Referring to FIG. **12**, in one example embodiment, the determination module **1110** may comprise:

[0108] a first determination unit **1111**, configured to determine the position of the second display region; and

[0109] a second determination unit **1112**, configured to determine the projection region of the second display region on the first display region according to the position.

[0110] The first determination unit **1111** can determine the position of the second display region through communication with the second display device, for example, receiving visible light information or sound wave information sent by vertices of the second display region.

[0111] In one example embodiment, the second determination unit **1112** may determine the projection region based on the principle of orthographic projection.

[0112] In another example embodiment, the second determination unit **1112** may determine the projection region based on the principle of central projection.

[0113] An acquisition module **1120**, configured to acquire related information of the second display region.

[0114] The acquisition module **1120** may acquire the related information of the second display region through communication with the second display device.

[0115] In one example embodiment, the related information of the second display region comprises: display content of the second display region.

[0116] In another example embodiment, the related information of the second display region comprises: display content of the second display region, and associated information of the display content.

[0117] In another example embodiment, the related information of the second display region comprises: coordinate information of display content of the second display region.

[0118] A display module **1130**, configured to display corresponding content in the projection region according to the related information of the second display region.

[0119] The content displayed in the projection region corresponds to the related information of the second display region.

[0120] In the event that the related information of the second display region is the display content of the second display region, the content displayed in the projection region is the display content of the second display region.

[0121] In the event that the related information of the second display region comprises display content of the second display region and associated information of the display content, the content displayed in the projection region is the display content of the second display region, and the associated information of the display content can be displayed according to a user instruction.

[0122] In the event that the related information of the second display region is coordinate information of a map displayed in the second display region, the display module can download the corresponding map according to the coordinate information, and displays the map corresponding to the coordinate information in the projection region.

[0123] In order to better guide the user to adjust the position of the first display device or the second display device to make the projection region located in a region desired by the user, referring to FIG. **13**, in one example embodiment, the apparatus **1110** may further comprise:

[0124] a prompt module **1140**, configured to display prompt information of the projection region on the first display region.

[0125] FIG. **14** is a schematic diagram of a modular structure of the content sharing apparatus according to another embodiment of the present application; as shown in FIG. **14**, the apparatus **1400** may comprise:

[0126] a determination module **1410**, configured to determine position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

[0127] a sending module **1420**, configured to send the position information and related information of the second display region to the first display device.

[0128] The content sharing apparatus according to this embodiment of the present application determines position information of a projection region of a second display region of a second display device on a first display region of a first display device and sends the position information and related information of the second display region to the first display device, and then the first display device can display corresponding content in the projection region, thus simplifying content sharing steps, improving content sharing efficiency and enhancing user experience.

[0129] The content sharing apparatus can be integrated to the second display device as a functional module.

[0130] The functions of the determination module **1410** and the sending module **1420** will be described below in detail in combination with example embodiments.

[0131] A determination module **1410**, configured to determine position information of a projection region of a second display region of a second display device on a first display region of a first display device.

[0132] Referring to FIG. **15**, in one example embodiment, the determination module **1410** may comprise:

[0133] a first determination unit **1411**, configured to determine the position of the first display region; and

[0134] a second determination unit **1412**, configured to determine the position information of the projection region of the second display region on the first display region according to the position.

[0135] The first determination unit **1411** may determine the position of the first display region through communication with the first display device, for example, receiving visible light information or sound wave information sent by vertices of the first display region.

[0136] In one example embodiment, the second determination unit **1412** may determine the projection region based on the principle of orthographic projection.

[0137] In another example embodiment, the second determination unit **1412** may determine the projection region based on the principle of central projection.

[0138] A sending module **1420**, configured to send the position information and related information of the second display region to the first display device.

[0139] The position information may be coordinate information configured to determine the projection region, for example, coordinate information of the projection points.

[0140] In one example embodiment, the related information of the second display region comprises: display content of the second display region.

[0141] In another example embodiment, the related information of the second display region comprises: display content of the second display region, and associated information of the display content.

[0142] In another example embodiment, the related information of the second display region comprises: coordinate information of display content of the second display region.

[0143] In addition, the first display device can display corresponding content in the projection region according to the position information and the related information of the second display region. For example, suppose that the related information of the second display region is a character picture and a scenery picture is displayed in the first display region, the first display device will achieve the effect of image stitching shown in FIG. **6** in the first display region.

[0144] One application scenario of the content sharing methods and apparatuses of the present application may be as follows: scenery pictures are played on a LCD TV in a slide mode, a user wants to embed a character picture on a tablet computer into a particular region of the scenery pictures, then the user aligns the table computer with the particular region, adjusts the position of the tablet computer according to prompt information of a current projection region displayed on the TV until the position is ideal, and then says "OK" at the tablet computer, and then the character picture is transmitted to the LCD TV and displayed in the particular region.

[0145] A hardware structure of the content sharing apparatus according to one embodiment of the present application is as shown in FIG. **16**. The embodiment of the present application does not limit implementation of the content sharing apparatus; referring to FIG. **16**, the apparatus **1600** may comprise:

[0146] a processor **1610**, a Communications Interface **1620**, a memory **1630**, and a communications bus **1640**.

[0147] The processor **1610**, the Communications Interface **1620**, and the memory **1630** accomplish mutual communications via the communications bus **1860**.

[0148] The Communications Interface **1620** is configured to communicate with other network elements.

[0149] The processor **1610** is configured to execute a program **1632**, and specifically, can implement relevant steps in the method embodiment shown in FIG. **1**.

[0150] Specifically, the program **1632** may comprise a program code, the program code comprising a computer operation instruction.

[0151] The processor **1610** may be a Central Processing Unit (CPU), or an Application Specific Integrated Circuit (ASIC), or be configured to be one or more integrated circuits which implement the embodiments of the present application.

[0152] The memory **1630** is configured to store the program **1632**. The memory **1630** may comprise a high-speed RAM memory, and may also comprise a non-volatile memory, for example, at least one magnetic disk memory. The program **1632** may specifically perform the following steps of:

[0153] determining a projection region of a second display region of a second display device on a first display region of a first display device;

[0154] acquiring related information of the second display region; and

[0155] displaying corresponding content in the projection region according to the related information of the second display region.

[0156] Reference can be made to the corresponding description in the corresponding steps or modules in the embodiments for implementation of the steps in the program **1632**, which is not repeated herein. Those skilled in the art can clearly understand that, reference can be made to the corresponding process description in the method embodiments for the devices described above and the specific working procedures of the modules, and will not be repeated herein in order to make the description convenient and concise.

[0157] A hardware structure of the content sharing apparatus according to another embodiment of the present application is as shown in FIG. **17**. The embodiment of the present application does not limit implementation of the content sharing apparatus; referring to FIG. **17**, the apparatus **1700** may comprise:

[0158] a processor **1710**, a Communications Interface **1720**, a memory **1730**, and a communications bus **1740**.

[0159] The processor **1710**, the Communications Interface **1720**, and the memory **1730** accomplish mutual communications via the communications bus **1740**.

[0160] The Communications Interface **1720** is configured to communicate with other network elements.

[0161] The processor **1710** is configured to execute a program **1732**, and specifically, can implement relevant steps in the method embodiment shown in FIG. **1**.

[0162] Specifically, the program **1732** may comprise a program code, the program code comprising a computer operation instruction.

[0163] The processor **1710** may be a Central Processing Unit (CPU), or an Application Specific Integrated Circuit (ASIC), or be configured to be one or more integrated circuits which implement the embodiments of the present application.

[0164] The memory **1730** is configured to store the program **1732**. The memory **1730** may comprise a high-speed RAM memory, and may also comprise a non-volatile memory, for example, at least one magnetic disk memory. The program **1732** may specifically perform the following steps of:

[0165] determining position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

[0166] sending the position information and related information of the second display region to the first display device.

[0167] Reference can be made to the corresponding description in the corresponding steps or modules in the embodiments for implementation of the steps in the program **1732**, which is not repeated herein. Those skilled in the art can clearly understand that, reference can be made to the corresponding process description in the method embodiments for the devices described above and the specific working procedures of the modules, and will not be repeated herein in order to make the description convenient and concise.

[0168] It can be appreciated by those of ordinary skill in the art that each exemplary unit and method step described with reference to the embodiments disclosed herein can be implemented by electronic hardware or a combination of computer software and electronic hardware. Whether these functions are executed in a hardware mode or a software mode depends on particular applications and design constraint conditions of the technical solution. The professional technicians can use different methods to implement the functions described with respect to each particular application, but such example embodiment should not be considered to go beyond the scope of the present application.

[0169] If the functions are implemented in the form of a software functional unit and is sold or used as an independent product, it can be stored in a computer-readable storage medium. Based on such understanding, the technical solution of the present application essentially or the part which contributes to the prior art or a part of the technical solution can be embodied in the form of a software product, and the computer software product is stored in a storage medium, and comprises several instructions for enabling a computer device (which can be a personal computer, a controller, or a network device, and the like) to execute all or some steps of the method described in each embodiment of the present application. The foregoing storage medium comprises, a USB disk, a removable hard disk, a Read-Only Memory (ROM), a Random Access Memory (RAM), a magnetic disk, an optical disk or any other mediums that can store program codes.

[0170] The above example embodiments are only intended to describe the present application rather than to limit the present application; various changes and variations can be made by those of ordinary skill in the art without departing from the spirit and scope of the present application, so all equivalent technical solutions also belong to the category of the present application, and the scope of patent protection of the present application should be defined by the claims.

What is claimed is:

1. A method, comprising:

determining, by a system comprising a processor, a projection region of a second display region of a second display device on a first display region of a first display device;

acquiring related information of the second display region; and

displaying corresponding content in the projection region according to the related information of the second display region.

2. The method of claim **1**, wherein the determining the projection region comprises:

determining a position of the second display region; and

determining the projection region of the second display region on the first display region according to the position.

3. The method of claim **1**, further comprising:

displaying prompt information of the projection region on the first display region.

4. The method of claim **1**, wherein the first display region is a virtual display region.

5. The method of claim **4**, wherein the first display region is a virtual display region relative to at least one eye of a user.

6. The method of claim 1, wherein the projection region is an orthographic projection region.

7. The method of claim 1, wherein the projection region is a central projection region.

8. The method of claim 1, wherein the related information of the second display region comprises: display content of the second display region.

9. The method of claim 1, wherein the related information of the second display region comprises: display content of the second display region, and associated information of the display content.

10. The method of claim 1, wherein the related information of the second display region comprises: coordinate information of display content of the second display region.

11. The method of claim 1, wherein an area of the first display region is greater than another area of the second display region.

12. A method, comprising:

determining, by a system comprising a processor, position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

sending the position information and related information of the second display region to the first display device.

13. The method of claim 12, wherein the determining the position information comprises:

determining a position of the first display region; and

determining the position information of the projection region of the second display region on the first display region according to the position.

14. The method of claim 12, the first display region is a virtual display region.

15. The method of claim 14, wherein the first display region is a virtual display region relative to an eye of a user.

16. The method of claim 12, wherein the display region is an orthographic projection region.

17. The method of claim 12, wherein the display region is a central projection region.

18. The method of claim 12, wherein the related information of the second display region comprises: display content of the second display region.

19. The method of claim 12, wherein the related information of the second display region comprises: display content of the second display region, and associated information of the display content.

20. The method of claim 12, wherein the related information of the second display region comprises: coordinate information of display content of the second display region.

21. The method of claim 12, wherein an area of the first display region is greater than another area of the second display region.

22. An apparatus, comprising:

a memory that stores executable modules; and

a processor, coupled to the memory, that executes or facilitates execution of the executable modules, comprising:

a determination module configured to determine a projection region of a second display region of a second display device on a first display region of a first display device;

an acquisition module configured to acquire related information of the second display region; and

a display module configured to display corresponding content in the projection region according to the related information of the second display region.

23. The apparatus of claim 22, wherein the determination module comprises:

a first determination unit configured to determine a position of the second display region; and

a second determination unit configured to determine the projection region of the second display region on the first display region according to the position.

24. The apparatus of claim 22, wherein the executable modules further comprise:

a prompt module configured to display prompt information of the projection region on the first display region.

25. An apparatus, comprising:

a memory that stores executable modules; and

a processor, coupled to the memory, that executes or facilitates execution of the executable modules, comprising:

a determination module configured to determine position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

a sending module configured to send the position information and related information of the second display region to the first display device.

26. The apparatus of claim 25, wherein the determination module comprises:

a first determination unit configured to determine a position of the first display region; and

a second determination unit configured to determine the position information of the projection region of the second display region on the first display region according to the position.

27. A computer readable storage apparatus, comprising at least one executable instruction, which, in response to execution, causes an apparatus comprising a processor to perform operations, comprising:

determining a projection region of a second display region of a second display device on a first display region of a first display device;

acquiring related information of the second display region; and

displaying corresponding content in the projection region according to the related information of the second display region.

28. An apparatus, characterized by comprising a processor and a memory, the memory storing executable instructions, the processor being connected to the memory via a communication bus, and when the apparatus operates, the processor executes the executable instructions stored in the memory, so that the apparatus performs operations, comprising:

determining a projection region of a second display region of a second display device on a first display region of a first display device;

acquiring related information of the second display region; and

displaying corresponding content in the projection region according to the related information of the second display region.

29. A computer readable storage apparatus, comprising at least one executable instruction, which, in response to

execution, causes an apparatus comprising a processor to perform operations, comprising:

determining position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

sending the position information and related information of the second display region to the first display device.

30. An apparatus, characterized by comprising a processor and a memory, the memory storing executable instructions, the processor being connected to the memory via a communication bus, and when the apparatus operates, the processor executes the executable instructions stored in the memory, so that the apparatus performs operations, comprising:

determining position information of a projection region of a second display region of a second display device on a first display region of a first display device; and

sending the position information and related information of the second display region to the first display device.

* * * * *