WHAT IS CLAIMED IS:

1. An image generating apparatus comprising:

a first data storage unit for storing a plurality of vector graphics data segments;

a second data storage unit for storing operation information defining a plurality of types of display operation patterns for any one of the vector graphics data segments in units of frames by using transformation matrices;

a third data storage unit for storing a plurality of picture-plane configuration information items which identifies a vector graphics data segment to be displayed in a display plane, out of the plurality of vector graphics data segments, and also identifies a display operation pattern to be assigned to the vector graphics data segment to be displayed, out of the plurality of types of display operation patterns; and

an image generation unit for obtaining a graphics data segment from the first data storage unit, in accordance with the picture-plane configuration information item specified out of the plurality of picture-plane configuration information items, obtaining a display operation pattern to be applied to the obtained vector graphics data segment from the third data storage unit, and generating animated images of the obtained vector graphics data segment in accordance with the obtained vector graphics data segment and the obtained display operation pattern.

2. The image generating apparatus of claim 1, wherein the image generation unit includes:

an animation data generation unit for generating animation data including the obtained vector graphics data segment and display control data corresponding to the obtained vector graphics data segment, on the basis of the obtained graphics data segment and the obtained display operation pattern; and

a drawing unit for generating the animated images by

decoding the graphics data segment in accordance with the animation data.

3. The image generating apparatus of claim 2, wherein the image generation unit further includes a list generation unit for generating a picture-plane display list which defines the drawing position of each of the graphics data segments in a display plane,

the drawing unit generating the animated images in accordance with the animation data and the picture-plane display list.

4. The image generating apparatus of claim 3, wherein:

the first data storage unit further stores a plurality of vector font data segments;

the animation data generation unit obtains a vector font data segment corresponding to specified text data from the first data storage unit, and generates animation data including the obtained vector font data segment and on-screen subtitle display control data corresponding to the obtained vector font data segment; and

the drawing unit generates the animated images by decoding the vector graphics data segment and the vector font data segment in accordance with the picture-plane display list and the animation data.

5. The image generating apparatus of claim 3 or 4, further comprising a memory where the picture-plane display list and the animation data are stored,

the drawing unit generating the animated images in accordance with the picture-plane display list and the animation data stored in the memory.

6. The image generating apparatus of claim 5, wherein:

the memory has first and second storage regions;

one of the first and second storage regions is used as a region where the picture-plane display list and animation data for a current display plane are stored;

the other of the first and second storage regions is used as a region where the picture-plane display list and animation data for a next display plane are stored; and

the image generation unit further includes a control unit for copying existing animation data from said one of the first and second storage regions onto the other of the first and second storage regions, without having the animation data generation unit generate the same animation data as the existing animation data stored in said one of the first and second storage regions among the animation data to be generated for the next display plane.

7. The image generating apparatus of claim 5 or 6, further comprising a registration unit for receiving a plane registration request, wherein:

the animation data generation unit obtains a vector graphics data segment for registration from the first data storage unit in accordance with the picture-plane configuration information item corresponding to the registration request among the plurality of picture-plane configuration information items, obtains a display operation pattern for registration to be assigned to the vector graphics data segment for registration from the third data storage unit, and generates animation data for registration including the vector graphics data segment for registration and display control data corresponding to the vector graphics data segment for registration in accordance with the vector graphics data segment for registration and the display operation pattern for registration;

the list generation unit generates a picture-plane display list for registration which defines a drawing position of each of the vector graphics data segments for registration in a display

plane; and

the memory stores the picture-plane display list for registration and the animation data for registration.

8. The image generating apparatus of claim 7, wherein:

the image generation unit further includes a judgment unit for judging whether the picture-plane display list corresponding to the specified picture-plane configuration information item agrees with the picture-plane display list for registration; and

the drawing unit generates the animated images in accordance with the picture-plane display list for registration and the animation data for registration when it is judged that the picture-plane display list corresponding to the specified picture-plane configuration information item agrees with the picture-plane display list for registration.

9. The image generating apparatus of one of claims 1 to 8, wherein the picture-plane configuration information item has the same graphics data segment to which the display operation patterns are assigned.

10. An image generating method comprising:

a step of identifying a vector graphics data segment to be displayed in a display plane, out of vector graphics data segments, and referencing a third data storage unit storing a plurality of picture-plane configuration information items identifying a display operation pattern to be assigned to the vector graphics data segment to be displayed, out of a plurality of types of display operation patterns for any one of the vector graphics data segments;

a step of obtaining a vector graphics data segment and a display operation pattern to be applied to the vector graphics data segment, from a first data storage unit storing the plurality of vector graphics data segments and a second data storage unit

storing operation information defining the plurality of types of display operation patterns in units of frames by using transformation matrices, in accordance with the picture-plane configuration information item specified out of the plurality of picture-plane configuration information items; and

a step of generating animated images of the obtained vector graphics data segment in accordance with the obtained vector graphics data segment and the obtained display operation pattern.

11. The image generating method of claim 10, wherein the step of generating the animated images includes:

a step of generating animation data including the obtained vector graphics data segment and display control data corresponding to the vector graphics data segment, in accordance with the obtained vector graphics data segment and the obtained display operation pattern; and

a step of generating the animated images by decoding the vector graphics data segment in accordance with the animation data.

12. The image generating apparatus of claim 11, wherein the step of generating the animated images further includes a step of generating a picture-plane display list defining a drawing position of each of the vector graphics data segments in the display plane,

the animated images being generated in accordance with the picture-plane display list and the animation data.

13. The image generating method of claim 12, further comprising a step of obtaining a vector font data segment corresponding to specified text data and generating animation data including the obtained vector font data segment and on-screen subtitle display control data corresponding to the obtained vector font data segment,

the animated images being generated by decoding the vector graphics data segment and the vector font data segment in accordance with the picture-plane display list and the animation data.

14. The image generating method of claim 12 or 13, further comprising a step of storing the picture-plane display list and the animation data in a memory,

the animated images being generated in accordance with the picture-plane display list and the animation data stored in the memory.

15. The image generating method of claim 14, further comprising:

a step of judging whether a picture-plane display list corresponding to the specified display plane has already been registered to the memory; and

a step of reading from the memory animation data for registration corresponding to the picture-plane display list for registration when it is judged that the picture-plane display list corresponding to the specified display plane has been registered, and generating animated images in accordance with the picture-plane display list for registration and the animation data for registration,

the picture-plane display list and the animation data being generated when it is judged that the picture-plane display list corresponding to the specified display plane does not agree with the picture-plane display list for registration.

WHAT IS CLAIMED IS:

1. An image generating apparatus comprising:

a first data storage unit for storing a plurality of vector graphics data segments;

a second data storage unit for storing operation information defining a plurality of types of display operation patterns for any one of the vector graphics data segments in units of frames by using transformation matrices;

a third data storage unit for storing a plurality of picture-plane configuration information items which identifies a vector graphics data segment to be displayed in a display plane, out of the plurality of vector graphics data segments, and also identifies a display operation pattern to be assigned to the vector graphics data segment to be displayed, out of the plurality of types of display operation patterns;

an image generation unit for obtaining a graphics data segment from the first data storage unit, in accordance with the picture-plane configuration information item specified out of the plurality of picture-plane configuration information items, obtaining a display operation pattern to be applied to the obtained vector graphics data segment from the third data storage unit, and generating animated images of the obtained vector graphics data segment in accordance with the obtained vector graphics data segment and the obtained display operation pattern; and

a memory having first and second storage regions,

the image generation unit including:

an animation data generation unit for generating animation data including the obtained vector graphics data segment and display control data corresponding to the obtained vector graphics data segment, on the basis of the obtained vector graphics data segment and the obtained display operation pattern;

a list generation unit for generating picture-plane display lists, each picture-plane display list defining a drawing position of each of the vector graphics data segments in the display plane;

a drawing unit for generating the animated images by decoding the vector graphics data segments in accordance with the animation data; and

a control unit, wherein:

the picture-plane display lists and the animation data are stored in the memory;

the drawing unit generates the animated images in accordance with the picture-plane display lists and the animation data stored in the memory;

one of the first and second storage regions is used as a region where one of the picture-plane display lists and the animation data for a current display plane are stored;

the other of the first and second storage regions is used as a region where another one of the picture-plane display lists and the animation data for a next display plane are stored; and

the control unit copies existing animation data in said one of the first and second storage regions onto the other of the first and second storage regions, without having the animation data generation unit generate the same animation data as the existing animation data stored in said one of the first and second storage regions among the animation data to be generated for the next display plane.

2. The image generating apparatus of claim 1, wherein:

the first data storage unit further stores a plurality of vector font data segments;

the animation data generation unit obtains a vector font data segment corresponding to specified text data from the first data storage unit, and generates animation data including the obtained vector font data segment and on-screen subtitle display control data corresponding to the obtained vector font data segment; and

the drawing unit generates the animated images by decoding the vector graphics data segment and the vector font data segment in accordance with the picture-plane display list and the animation data.

3. The image generating apparatus of claim 1, further comprising a registration unit for receiving a plane registration request, wherein:

the animation data generation unit obtains a vector graphics data segment for registration from the first data storage unit in accordance with the picture-plane configuration information item corresponding to the plane registration request among the plurality of picture-plane configuration information items, obtains a display operation pattern for registration to be assigned to the vector graphics data segment for registration from the third data storage unit, and generates animation data for registration including the vector graphics data segment for registration and display control data corresponding to the vector graphics data segment for registration in accordance with the vector graphics data segment for registration and the display operation pattern for registration;

the list generation unit generates a picture-plane display list for registration which defines a drawing position of each of the vector graphics data segments for registration in a display plane; and

the memory stores the picture-plane display list for registration and the animation data for registration.

4. The image generating apparatus of claim 3, wherein:

the image generation unit further includes a judgment unit for judging whether the picture-plane display list corresponding to the specified picture-plane configuration information item agrees with the picture-plane display list for registration; and

the drawing unit generates the animated images in accordance with the picture-plane display list for registration and the animation data for registration when it is judged that the picture-plane display list corresponding to the specified picture-plane configuration information item agrees with the picture-plane display list for registration.

5. The image generating apparatus of claim 1, wherein the picture-plane configuration information item has the same graphics data segment to which the display operation patterns are assigned.

6. An image generating method comprising:

a step of identifying a vector graphics data segment to be displayed in a display plane, out of a plurality of vector graphics data segments, and referencing a third data storage unit storing a plurality of picture-plane configuration information items identifying a display operation pattern to be assigned to the vector graphics data segment to be displayed, out of a plurality of types of display operation patterns for any one of the plurality of vector graphics data segments;

a step of obtaining a vector graphics data segment and a display operation pattern to be applied to the vector graphics data segment, from a first data storage unit storing the plurality of vector graphics data segments and a second data storage unit storing operation information defining the plurality of types of display operation patterns in units of frames by using transformation matrices, in accordance with the picture-plane configuration information item specified out of the plurality of picture-plane configuration information items;

a step of generating animated images of the obtained vector graphics data segment in accordance with the obtained vector graphics data segment and the obtained display operation pattern;

a step of generating animation data including the obtained vector graphics data segment and display control data corresponding to the obtained vector graphics data segment, on the basis of the obtained vector graphics data segment and the obtained display operation pattern;

a step of generating picture-plane display lists, each picture-plane display list defining a drawing position of each of the vector graphics data segments in the display plane;

a step of storing the picture-plane display lists and the animation data in a memory;

a step of generating the animated images by decoding the vector graphics data segments in accordance with the picture-plane display lists and the animation data stored in the memory;

a step of judging whether the picture-plane display list corresponding to a specified display plane has already been registered to the memory; and

a step of reading from the memory animation data for registration corresponding to the picture-plane display list for registration when it is judged that the picture-plane display list corresponding to the specified display plane has been registered, and generating animated images in accordance with the picture-plane display list for registration and the animation data for registration, the picture-plane display list and the animation data being generated when it is judged that the picture-plane display list corresponding to the specified display plane does not agree with the picture-plane display list for registration.

7. The image generating method of claim 6, further comprising a step of obtaining a vector font data segment corresponding to specified text data and generating animation data including the obtained vector font data segment and on-screen subtitle display control data corresponding to the obtained vector font data segment,

the animated images being generated by decoding the vector graphics data segment and the vector font data segment in accordance with the picture-plane display list and the animation data.