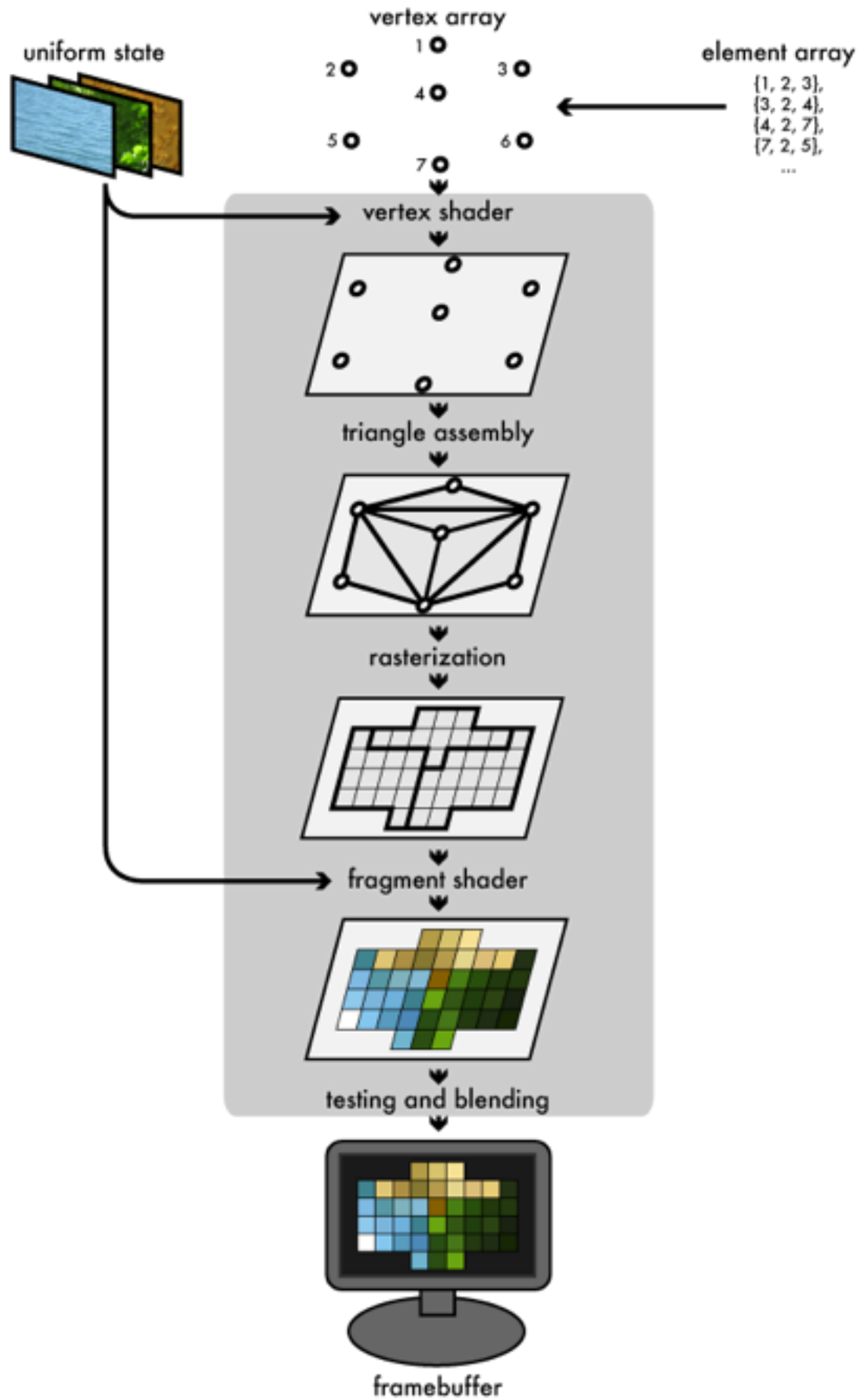
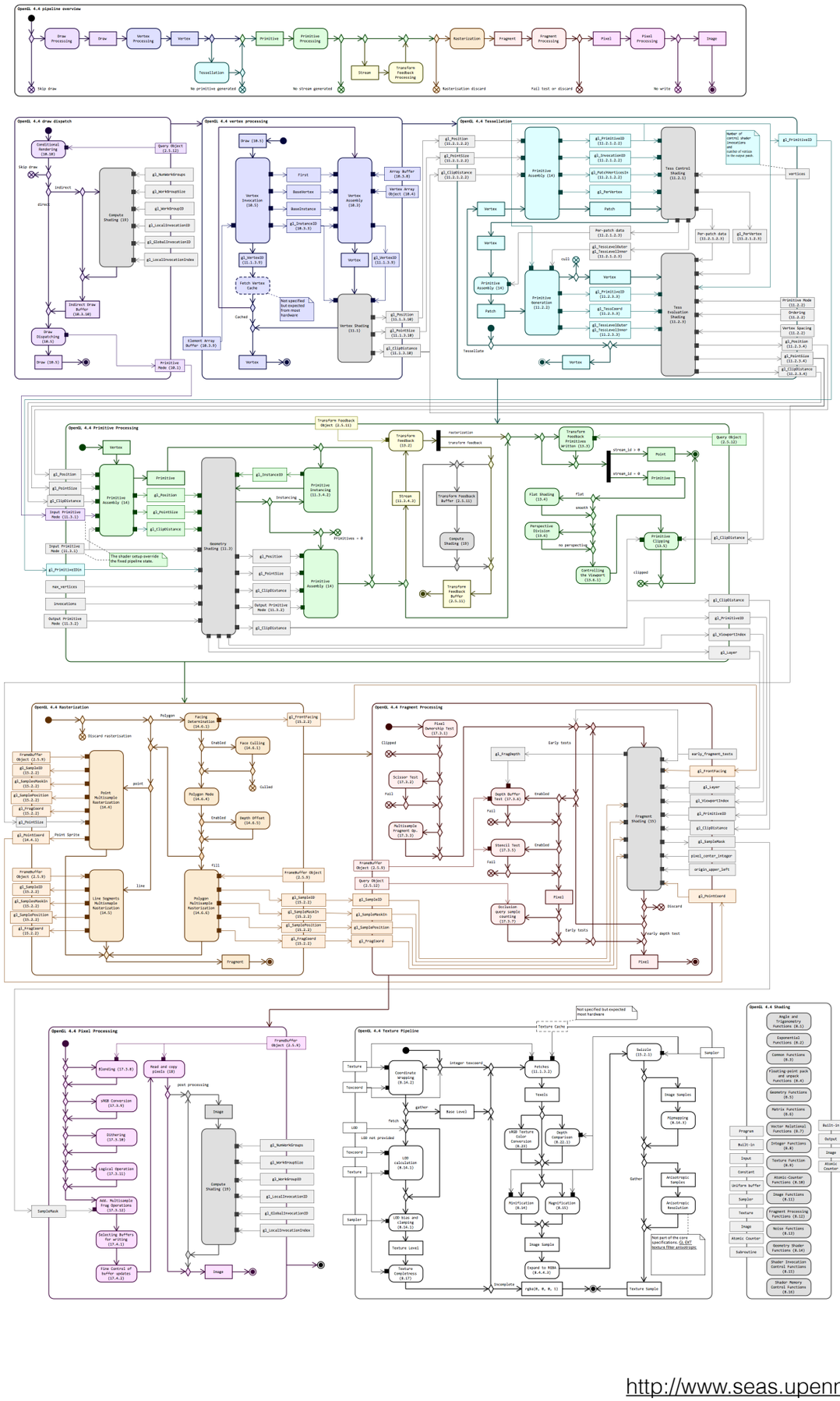
OpenGL

a cross-platform library for interfacing with programmable GPUs for the purpose of rendering graphics



http://duriansoftware.com/joe/An-intro-to-modern-OpenGL.-Chapter-1:-The-Graphics-Pipeline.html



http://www.seas.upenn.edu/~pcozzi/OpenGLInsights/OpenGL44PipelineMap.pdf

Typical workflow

```
#include <libraryheaders>

int main()
{
    createWindow(title, width, height);
    createOpenGLContext(settings);

    while (windowOpen)
    {
        while (event = newEvent())
            handleEvent(event);

        updateScene();

        drawGraphics();
        presentGraphics();
    }

    return 0;
}
```

http://open.gl/context

Window and context	Bind to available functions	Graphics
GLUT	GLEW	OpenGL
GLFW	GLEE	
SFML		
SDL		

GLSL

OpenGL Shading Language

A Vertex Shader

```
#version 150

in vec2 position;

void main()
{
    gl_Position = vec4(position, 0.0, 1.0);
}
```

http://open.gl/drawing

A Fragment Shader

```
#version 150

out vec4 outColor;

void main()
{
    outColor = vec4(1.0, 1.0, 1.0, 1.0);
}
```

http://open.gl/drawing

Shaders II

```
#version 150

in vec2 position;
in vec3 color;

out vec3 Color;

void main()
{
    Color = color;
    gl_Position = vec4(position, 0.0, 1.0);
}
```

```
#version 150

in vec3 Color;

out vec4 outColor;

void main()
{
    outColor = vec4(Color, 1.0);
}
```

http://open.gl/drawing