

SPOUT UPDATE - 28th September 2014

Background :

FBO binding

Spout functions use an internal FBO for texture transfers. If the application calls these functions with an FBO already bound, this binding has to be restored. Although this is documented, the need to restore the binding is more obvious if the FBO id is part of the function.

Byte alignment

The default byte alignment for OpenGL is 4-byte, so a flag has been provided to over-ride this if necessary.

Pixel format

The function "**SendImage**" for transfer of pixel data to a shared texture assumed RGB format. This has been changed to allow a variable OpenGL format.

Changes have been made to :

- 1) **SendImage** to allow for a variable OpenGL format. e.g. transfer of RGBA or RGB images.
- 2) **SendImage** to allow for disabling the default OpenGL 4-byte alignment for `glTexSubImage2D`.
- 3) **SendTexture**, **DrawToSharedTexture** and **ReceiveTexture** to allow the host program to specify the ID of any FBO that is currently bound. Spout then restores that binding internally.

Changes required to existing code :

The defaults, "**glFormat = RGB**", "**HostFBO = 0**" and "**bAlignment = true**" are the same as the values that were used internally, so existing code should not normally be affected.

However :

- 1) In order to specify a value for "**HostFBO**" , all preceding argument values must be specified as well.
- 2) Any call to **SendImage** in existing code must be changed to specify "**glFormat** " (default GL_RGBA) and "**bAlignment**" (default true) if the "**bInvert**" argument is currently used.

CHANGES TO SENDER AND RECEIVER CLASSES

Sender class

Added GL format for SendImage
Added bAlignment (4 byte alignment) flag for SendImage
Added Host FBO for SendTexture, DrawToSharedTexture

```
bool SendImage(unsigned char* pixels,
               unsigned int width, unsigned int height,
               GLenum glFormat = GL_RGBA,
               bool bAlignment = true,
               bool bInvert=true);

bool SendTexture(GLuint TextureID, GLuint TextureTarget,
                unsigned int width, unsigned int height,
                bool bInvert=true,
                GLuint HostFBO = 0);

bool DrawToSharedTexture(GLuint TextureID, GLuint TextureTarget,
                        unsigned int width, unsigned int height,
                        float max_x = 1.0, float max_y = 1.0, float aspect = 1.0,
                        bool bInvert = true,
                        GLuint HostFBO = 0);
```

Receiver class

Added Host FBO for ReceiveTexture

```
bool ReceiveTexture(char* Sendername,
                   unsigned int &width, unsigned int &height,
                   GLuint TextureID = 0, GLuint TextureTarget = 0,
                   GLuint HostFBO = 0);
```

INTERNAL CHANGES

Spout class

Added GL format for SendImage and FlipVertical.
Added bAlignment (4 byte alignment) flag for SendImage.
Added Host FBO for SendTexture, DrawToSharedTexture, ReceiveTexture.

```
bool SendImage(unsigned char* pixels,
               unsigned int width, unsigned int height,
               GLenum glFormat = GL_RGBA,
               bool bAlignment = true,
               bool bInvert = true);

bool SendTexture(GLuint TextureID, GLuint TextureTarget,
                unsigned int width, unsigned int height,
                bool bInvert = true,
                GLuint HostFBO = 0);
```

```

bool DrawToSharedTexture(GLuint TextureID, GLuint TextureTarget,
    unsigned int width, unsigned int height,
    float max_x = 1.0, float max_y = 1.0, float aspect = 1.0,
    bool bInvert = true,
    GLuint HostFBO = 0);

bool ReceiveTexture(char* Sendername,
    unsigned int &width, unsigned int &height,
    GLuint TextureID = 0, GLuint TextureTarget = 0,
    GLuint HostFBO = 0);

bool FlipVertical(unsigned char *src,
    unsigned int width, unsigned int height,
    GLenum glFormat = GL_RGBA);

```

Interop class

Added GLformat for WriteTexturePixels.
 Added bAlignment (4 byte alignment) flag for WriteTexturePixels.
 Changed GLformat from int to GLenum in ReadTexturePixels.
 Changed default GLformat from GL_RGB to GL_RGBA in ReadTexturePixels.
 Added Host FBO for ReadTexture, DrawToSharedTexture, WriteTexture.

```

bool WriteTexturePixels(unsigned char *pixels,
    unsigned int width, unsigned int height,
    bool bAlignment = true,
    GLenum glFormat = GL_RGBA);

bool ReadTexturePixels(unsigned char *pixels,
    unsigned int width, unsigned int height,
    GLenum glFormat = GL_RGBA);

bool ReadTexture(GLuint TextureID, GLuint TextureTarget,
    unsigned int width, unsigned int height'
    GLuint HostFBO = 0);

bool WriteTexture(GLuint TextureID, GLuint TextureTarget,
    unsigned int width, unsigned int height,
    bool bInvert = false,
    GLuint HostFBO = 0);

bool DrawToSharedTexture(GLuint TextureID, GLuint TextureTarget,
    unsigned int width, unsigned int height,
    float max_x, float max_y, float aspect,
    bool bInvert,
    GLuint HostFBO = 0);

```