EGLStream DataLocator Extension Specification

Version 1.0

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September 21, 2011

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1 Overview

1.1 Purpose of this Document

This document details the API for an extension to OpenMAX Application Layer (AL) 1.0. Developed as an open standard by the Khronos Group, OpenMAX AL EGLStream Extension is consists of a macro and structure definitions. It provides a mechanism for OpenMAX AL media objects to interface with an EGLStream object in a standardized fashion.

1.1.1 About the Khronos Group

The Khronos Group is a member-funded industry consortium focused on the creation of open standard, royalty-free APIs to enable the authoring and accelerated playback of dynamic media on a wide variety of platforms and devices. All Khronos members can contribute to the development of Khronos API specifications, are empowered to vote at various stages before public deployment, and may accelerate the delivery of their multimedia platforms and applications through early access to specification drafts and conformance tests. The Khronos Group is responsible for open APIs such as OpenGL ES, OpenKODE, OpenSL ES and OpenVG.

1.2 Intended Audience

This specification is meant for application-developers and implementers.

2 OpenMAX AL EGLStream DataLocator

2.1 Motivation

There is a need for OpenMAX AL to interoperate with EGL to facilitate advanced multimedia/graphics use cases. These use cases involve exchange of video content between OpenMAX AL and graphics APIs like OpenGL ES and OpenVG and windowing APIs like OpenWF, with EGL acting as the "go-between".

The EGL_KHR_stream [EGL STRM] extension to EGL utilizes an EGLStream object to transport video frames produced by a producer API (like OpenMAX AL) to a consumer API (like OpenGL ES). It can also be used to transport video frames in the reverse direction (e.g. OpenGL ES acting as the producer API and OpenMAX AL acting as the consumer API). There is currently no standardized mechanism in the OpenMAX AL specification to facilitate this interaction between AL and the graphics/windowing APIs.

2.2 Functional Overview

This extension adds a new data locator (XADataLocator_EGLStream) that can be used to inject decoded video frames produced by an OpenMAX AL media object into the EGLStream or to extract video frames from EGLStream to be fed into an OpenMAX AL media object for encoding.

2.3 New Data Locator: XADataLocator_EGLStream

We define a new data locator, XADataLocator_EGLStream, represented by the following macro:

```
#define XA_DATALOCATOR_EGLSTREAM    ((XAuint32) 0x0000000A)
```

and the following structure definition:

```
typedef struct XADataLocator_EGLStream_ {
    XAuint32 locatorType;
    const void * pEGLStream;
    const void * pEGLDisplay;
} XADataLocator_EGLStream;
```

Fields include:

Field	Description
`locatorType`	Locator type, which must be `XA_DATALOCATOR_EGLSTREAM` for this structure.
`pEGLStream`	Pointer to the EGLStream object. Refer to the EGLStream extension specification [EGL STRM] for details.
`pEGLDisplay`	Pointer to the EGLDisplay object. Refer to Section 2.1.2 of the EGL specification [EGL 1.4] for details.

The two pointers are of type void * to avoid a direct reference and dependency to types

defined outside the OpenMAX AL specification. Users of this data locator should cast these void * pointers to the appropriate types.

This data locator contains pointers to both the EGLStream and EGLDisplay objects and can be used in the XADataSink (Section 9.1.19 in [AL 1.1] and XADataSource (Section 9.1.20 in [AL 1.1] structures to specify the destination and source respectively for the video frames.

When this data locator is used in XADataSink or XADataSource, the pFormat field of these structures is ignored as there is no XADataFormat structure (Section 9.2.24 in [AL 1.1] appropriate for XADataLocator_EGLStream.

2.4 New Extension Header: OpenMAXAL_EGL_EXT.h

In keeping with the extensibility rules defined in Section 3.6 of the AL 1.1 specification, the proposed `XA_DATALOCATOR_EGLSTREAM` macro and the `XADatalocator_EGLStream` structure are in a separate extension header called `OpenMAXAL_EGL_EXT.h`.

3 References

[AL 1.1]
http://www.khronos.org/registry/omxal/specs/OpenMAX_AL_1_1_Specification.pdf

[EGL 1.4] http://www.khronos.org/registry/egl/specs/eglspec.1.4.20101006.pdf

[EGL STRM] http://www.khronos.org/registry/egl/extensions/KHR/EGL_KHR_stream.txt