Ecosystem Update

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Outline

- SDK News
  - Documentation
  - KTX and libktx
  - GLU3
- Desktop EGL and EGL Sample Implementation
- Conformance
SDK News – Documentation

- Man pages finally updated!
- Separate GL 3.3 and GL 4.1 sections
  - http://www.opengl.org/sdk/docs/man3
  - http://www.opengl.org/sdk/docs/man4
- Thanks to Graham Sellers!
SDK News – KTX Tools

- KTX (Khronos TeXture) is a lightweight file format for OpenGL / OpenGL ES textures
- Contains all the parameters needed for texture loading in GL / ES
- Supports many texture target types and formats, including ETC1 texture compression
- libktx provides functions for writing KTX files and loading textures from KTX files
- [http://www.khronos.org/opengles/sdk/docs/tools/KTX](http://www.khronos.org/opengles/sdk/docs/tools/KTX) (and will be linked from the OpenGL SDK as well)
- Thanks to Mark Callow!
SDK News - GLU3

- GLU hasn't been kept up to date for modern OpenGL
- Mostly won't even work when using vertex shaders, or in the core profile
- GLU3 is an open source project intended to be a modern GLU that works in the programmable shader world
  - Vector/matrix math, viewing transforms, arcball controller
  - Shape generators (like old GLU spheres, quadrics, etc.)
  - Shader helper functions
- 0.9 release for SIGGRAPH at http://dri.freedesktop.org/glu3/, will be linked into the OpenGL SDK soon
- Thanks to Ian Romanick!
EGL Overview

- EGL originally was just a clone of GLX with the platform-specific data types replaced, to support OpenGL ES on mobile platforms
- EGL 1.4 provides basic resource management
  - Config selection supporting one or more client APIs (OpenGL ES, OpenVG)
  - Surface and API context creation
  - Binding contexts to surfaces for rendering
  - Displaying rendered surfaces
- EGL is widespread (though not on every mobile platform)
- Has grown over time to support other client APIs and (via extensions) synchronizing between / sharing images among those APIs
Desktop EGL

- OpenGL ES is now pervasive on mobile. OpenGL ES 2.0 on the desktop will help developers targeting mobile devices.

- Desktop EGL may also diminish need for platform-specific layers in the future.

- Many vendors interested in this, now working on an EGL “ICD loader” for Windows and Linux.

- Similar functionality to Windows OPENGL32.DLL and Linux libGL.so.
  - EGL framework
  - Load and dispatch calls to appropriate hardware driver
  - Much like the existing Khronos OpenCL ICD.
Desktop EGL

- Implements “as much of EGL 1.4 as required” (some capabilities not relevant to OpenGL / OpenGL ES)
- Expected to be an open source project
  - Deploy binaries on khronos.org / opengl.org and with vendor driver downloads
- Intended to support OpenGL 4.1 and OpenGL ES 2.0 initially
  - Note that GL 4.1 include “ES2 compatibility” which is not the same thing as an OpenGL ES 2.0 context
- GLX / WGL / etc. aren't going away, but new projects should consider using EGL instead
- OpenGL ES + EGL on the desktop should be an attractive learning / development / porting platform for mobile apps
EGL - Mobile API Interoperability Hub

Buffers, textures and video streams flow efficiently between any combination of client APIs.

Inter-API Synchronization events enable efficient resource sharing.

EGL Interoperability Conformance Tests being created to ensure that client APIs can cleanly communicate.

Enabling the Khronos individual APIs to interoperate as a coherent ecosystem.
EGL Sample Implementation

- Combines software renderers for EGL 1.4, many EGL interoperability extensions, OpenGL ES 2.0, OpenVG 1.1, OpenMAX IL 1.1

- Open source project which will deploy as a VMware image running under Ubuntu Linux

- On schedule, about 75% complete. Expect to release in 2-3 months

- Very different focus from Desktop EGL – this is a full set of Khronos mobile APIs and interoperability extensions, but is not hardware accelerated

- Will talk more about this in the Mobile BOF tomorrow

- Thanks to Greg Prisament of Lychee Software, our contractor!
Conformance

- We have been talking about conformance for a while...
Conformance

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- Quite a while...
Conformance

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- Quite a while...
- Really a very long while...
Conformance

- We have been talking about updating conformance for a while...
- Quite a while...
- Really a very long while...
- Last updated for OpenGL 1.2.1 (1999), to be precise
Conformance

- Finally making some concrete progress
- OpenGL ES 2.0 conformance suite has been ported to desktop GL
- Started adding basic tests for new functionality already
- But we'll need a dedicated design / coding effort (~6-9 man-months) to complete
- Project funding proposal going to the Khronos Promoters at next opportunity, will be followed by an RFQ
- Future OpenGL ES versions will leverage this work, since they are likely to implement more desktop functionality