

**K H R O N O S**  
G R O U P

**OpenGL 3** Revolution  
through  
volution

**Siggraph BOF 2008**  
**Barthold Lichtenbelt**

# Agenda

- **OpenGL 3.0 and GLSL 1.30 announcement** (Barthold Lichtenbelt, NVIDIA)
- **OpenGL 3.0 new features** (Jeremy Sandmel, OpenGL 3.0 TSG chair)
- **GLSL 1.30 new features** (Bill Licea-Kane, AMD)
- **OpenGL 3.0 ISV Perspective** (Rob Barris, Blizzard; Daniel Koch, Transgaming)
- **Ecosystem TSG update** (Jon Leech, Khronos)
- **IHV announcements**
- **OpenCL** (Neil Trevett, NVIDIA)
- **gDEDebugger update** (Yaki Tebeka, Graphic Remedy)
- **Spec update** (Ian Williams, NVIDIA)
- **Announcement** (Paul Martz, Skew Matrix)
- **Upcoming Books** (Dave Shreiner, ARM)

# Announcing OpenGL 3.0

- **Support for latest generations of Programmable Hardware**
  - Installed base > 60 Million units
- **New deprecation model with profiles**
  - Streamline the API
- **Full interoperability with OpenCL**
  - Access to compute
- **Collaboration among hardware vendors and software vendors**
  - Solving real needs
- **Cross platform**
  - Windows XP and Vista, Linux, Mac OS, ...

# OpenGL 3.0 new features

- Forward-looking context
- Greater VBO performance
- FBO and related extensions
  - EXT\_framebuffer\_object, EXT\_framebuffer\_blit, EXT\_framebuffer\_multisample, EXT\_packed\_depth\_stencil
- Conditional rendering
- Transform feedback
- Floating point internal formats for textures and renderbuffers
- Half-float (16-bit) vertex and pixel data formats
- One and two-channel (R and RG) internal formats for textures and renderbuffers
- RGTC internal compressed texture formats, packed float and texture shared exponent
- sRGB framebuffer support

# Announcing GLSL 1.30

- **Native integer support**
  - bitwise operators, texture return values, uniforms, shader input/outputs
- **Expanded texturing support**
  - Size queries, offsets, explicit LOD and derivative control, texture arrays, integer support
- **Switch statements**
- **Several new built-in functions**
  - Hyperbolic trig functions
  - trunc(), round(), roundEven(), isnan(), isinf(), modf()
  - Integer related: sign(), min/max(), abs(), ....
- **Pre-processor token pasting (##)**
- **User-defined fragment outputs**
- **Non-perspective interpolation of varying variables**
- **gl\_VertexID vertex shader input**
- **Follows the same deprecation model as the API**

# Announcing extension packs

- **OpenGL 2.x extensions**

- ARB\_framebuffer\_object
- ARB\_half\_float\_vertex
- ARB\_framebuffer\_sRGB
- ARB\_map\_buffer\_range
- ARB\_texture\_compression\_rgtc
- ARB\_vertex\_array\_object
- ARB\_texture\_rg
- ARB\_instanced\_arrays

- **OpenGL 3.0 extensions**

- ARB\_draw\_instanced
- ARB\_geometry\_shader
- ARB\_texture\_buffer\_object
- WGL/GLX\_create\_context

# Specification download

<http://www.opengl.org/registry>

# Future release plans

- **Schedule driven**
- **ARB extensions are candidates for folding into a future core**
  - ARB\_draw\_instanced
  - ARB\_geometry\_shader
  - ARB\_texture\_buffer\_object
- **Backing uniform variables with buffer objects**
- **#include mechanism for GLSL**
- **Attribute index offsets**
- **Remove deprecated features**
- **Profiles**
- **Object model improvements**
- **Other functionality you need?**



# Trivia questions

How good is your knowledge of OpenGL and GLSL?