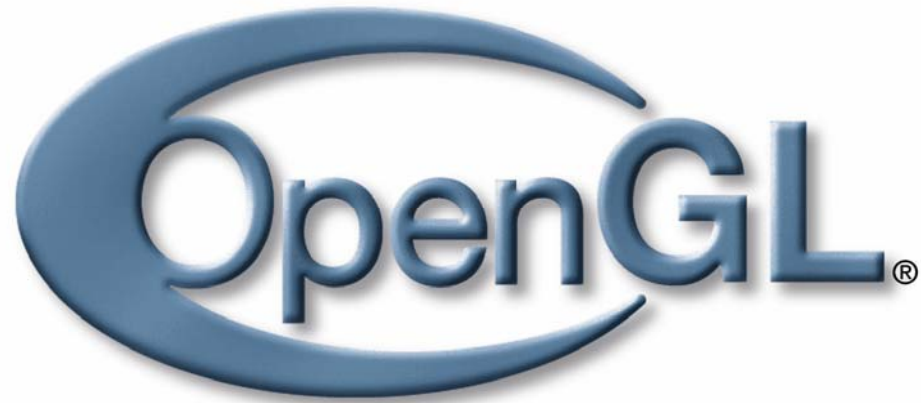


**K H R O N O S**  
G R O U P



OpenGL in 2007

Barthold Lichtenbelt  
ARB Chair, NVIDIA

# OpenGL Applications - Examples

- Gaming
  - Doom3 / Quake 4 / Prey
  - Pacific Fighters
  - Serious Sam
  - WoW (Apple platform)
- MCAD
  - Dassault CATIA
  - PTC Pro/Engineer
- DCC
  - Autodesk Maya
  - Softimage XSI
- Imaging
  - Medical – GE / Philips / Siemens
  - Oil and Gas – Landmark / Paradigm
- Scientific Visualization
  - Lot of university brewed applications
- High end video editing
  - Adobe After Effects
  - Discreet Fire / Smoke
- Hobbyists
  - OpenGL often preferred API



# OpenGL ARB responsibilities and scope

- Definition of the OpenGL API
  - Currently at version 2.1. Released Aug 2006
- Definition of the OpenGL Shading Language
  - Currently at version 1.20
- Definition of GLX and WGL APIs
- Ecosystem focus
  - Provide more than a set of specifications
  - OpenGL SDK. Man pages, coding examples, extension loading
  - OpenGL Pipeline newsletter
  - Debuggability and usability
  - Public speaking events
- Contributions to [www.opengl.org](http://www.opengl.org)
  - Huge resource for OpenGL related information, includes active forums
  - ARB posts polls, the OpenGL pipeline, specifications, registry
  - members posts on the forums
  - Same webmaster for [www.khronos.org](http://www.khronos.org)



# OpenGL ARB 2007 activities

- Two OpenGL releases planned in 2007
  - OpenGL Longs Peak
    - Implementable on current and last generation hardware
    - improve rendering performance, address problems
    - Revamp of API
  - OpenGL Mount Evans
    - Implementable on 2007 hardware
    - Next-gen programmability
    - Lot of new functionality in the OpenGL Shading Language
- OpenGL SDK
  - Published by the ARB
  - Contributions from ARB members as well as outsiders
  - [www.opengl.org/sdk](http://www.opengl.org/sdk)
- Quarterly OpenGL pipeline newsletter
  - Content provided by ARB members and guest writers
  - If interested in contributing, contact me



# OpenGL Longs Peak

- Why?
  - OpenGL 14+ years old
  - Increasingly difficult to extend, implement and program
  - Has some inherent inefficiencies
- Major cleanup effort
  - Introduces new object model
  - Easy migration path from OpenGL 2
- Benefits
  - Higher performance
  - Easier to code to
  - Easier to implement
- Release planned for late summer



Longs Peak - 14,255 feet

# OpenGL Mount Evans

- Builds on Longs Peak
- Adds a lot of new features
  - Geometry shader
  - Greatly increased integer support in the OpenGL Shading Language
  - Stream out of vertex data to a buffer object
  - Texture arrays
  - Texture buffer objects
  - Numerous new texture formats
  - Instanced rendering
  - More – contact ARB for details
- Fully exposes 2007 desktop hardware capabilities
- Release 3 months after OpenGL Longs Peak



# OpenGL, OpenGL ES and glFX

- OpenGL for desktop graphics
- OpenGL ES for embedded graphics
- glFX to provide missing tool-chain link for both APIs
- Strong roadmap synergy between OpenGL, OpenGL ES and glFX
  - But each API can make decisions applicable to their target market
- OpenGL and OpenGL ES benefit each other



# OpenGL ARB Technical Sub Groups

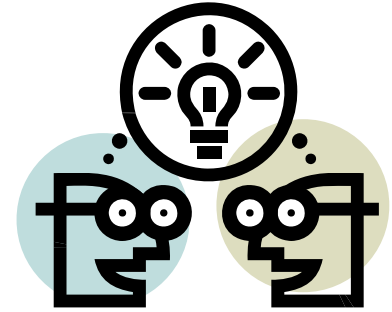
- Five TSGs that meet a total of 5 times per week
- Shading Language TSG – Bill Licea-Kane, AMD
  - Anything touching the OpenGL Shading Language for both Longs Peak and Mount Evans projects
- Ecosystem TSG – Benj Lipchak, AMD
  - Conformance tests
  - Tools
  - Drive marketing activities to maximize our impact – Includes our newsletter
  - Documentation
  - OpenGL SDK
- Object Model TSG – Barthold Lichtenbelt, NVIDIA
  - New Object Model
  - Longs Peak API
- Next-Gen TSG – Jeremy Sandmel, Apple
  - API impact of Mount Evans
- Platform TSG – Jon Leech, Self
  - WGL / GLX / EGL





# Interested in becoming a contributor?

- Several levels of membership
  - Promoter, contributor, academic contributor
  - Adopter, implementer
- Key benefits of being a contributor
  - Participation in ongoing OpenGL ARB discussions
  - Marketing support
- Go to [www.khronos.org](http://www.khronos.org) -> Members -> Membership benefits
- Or contact me directly: [blichtenbelt@nvidia.com](mailto:blichtenbelt@nvidia.com)



# Call for input

- What do you think of the new object model?
  - Visit [www.opengl.org](http://www.opengl.org) forums
- What is missing in your opinion?
  - OpenGL Longs Peak, OpenGL Mount Evans
  - SDK
  - Newsletter
  - Something else?
- How important is ease of porting from D3D to OpenGL?
  - GLSL (OpenGL) vs HLSL (D3D)
  - Provoking vertex being the last (OpenGL) vs first vertex (D3D)
  - BGRA ordering (D3D only)
  - Lower-left (OGL) vs upper-left origin (D3D)
  - half pixel centers (OpenGL) vs integer locations (D3D9 and earlier)
- Post feedback on the forums on [opengl.org](http://opengl.org) – please participate!
- Email [blichtenbelt@nvidia.com](mailto:blichtenbelt@nvidia.com)
- Contact one of us on the show floor



