Mesa: State of the Project

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Agenda

• What happened since last XDC?
• What's up for the next Mesa release?
• And after that?
Where were we?

- Mesa 8.0.4 (July 10, 2012)
  - OpenGL 3.0 (on some hardware)
  - 4 years behind the OpenGL 3.0 spec release (August 2008)
Where did we go?

- Mesa 9.0 (October 8, 2012)
  - OpenGL 3.1
  - Pile of extensions from 3.2, 3.3, and 4.x
  - Added Clover (OpenCL) state tracker
  - 3.5 years behind the OpenGL 3.1 spec release (March 2009)
Where did we go?

• Mesa 9.1 (February 22, 2013)
  • OpenGL ES 3.0
  • Small handful of new extensions
  • Removed some old NVIDIA assembly shader extensions
  • 6 months behind the OpenGL ES 3.0 spec release (August 2012)
    • One of the first shipping implementations
What else happened?

• Shift in release cycle timing
  • 2012 / 2013 were the “six month” cycle years
  • 2013 / 2014 will be the “three month” cycle years
  • Distros got tired of wait for new features to be released, so they just shipped “random” points on master

• Slight change in stable branch policy
  • No longer mark patches “NOTE: This is a candidate...”
  • Instead “Cc: mesa-stable@...”
  • Unmarked patches can be sent to mesa-stable after landing on master
  • Carl Worth has taken over stable branch management
    • And stable releases have been much more regular
    • Isn't it time for 9.2.1???
Where are we going now?

- Mesa 10.0
  - OpenGL 3.3 – The only thing missing is geometry shaders :)  
  - GL_ARB_separate_shader_objects
  - GL_ARB_shader_atomic_counters
  - GL_ARB_gpu_shader5
  - GL_ARB_texture_gather
  - Others?

- Most likely release date: November 27th, 2013
  - mesa-10.0 branch should be no later than November 1st
### Historical Progress

<table>
<thead>
<tr>
<th>Spec Release</th>
<th>Mesa supports</th>
<th>Gap (years)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1 08/02/06</td>
<td>04/27/07</td>
<td>0.7</td>
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<tr>
<td>3.0 08/11/08</td>
<td>02/12/12</td>
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<td>3.1 03/24/09</td>
<td>02/22/13</td>
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<td>4.3</td>
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<td>4.2 08/08/11</td>
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</tbody>
</table>

*Projected. :)
And then?

- Mesa 10.1 (February ??, 2014)
  - ?

- My observations:
  - Nobody seems to want tessellation shaders
  - Nobody seems to want double precision
  - Most people don't even know what “shader subroutines” are
  - Everybody wants compute shaders

- Most likely release date: mid-February 2014
  - Probably make mesa-10.1 branch mid-January
Oh OpenGL 4.x...

• OpenGL 4.0 is 3.3 plus...
  • GL_ARB_texture_query_lod (supported since 9.2)
  • GL_ARB_draw_buffers_blend (supported since 7.11)
  • GL_ARB_draw_indirect
  • GL_ARB_gpu_shader5 (should be 10.0)
  • GL_ARB_gpu_shader_fp64
  • GL_ARB_sample_shading
  • GL_ARB_shader_subroutine
  • GL_ARB_tessellation_shader
  • GL_ARB_texture_buffer_object_rgb32 (supported since 9.1)
  • GL_ARB_texture_cube_map_array (supported since 9.1)
  • GL_ARB_texture_gather (should be in 10.0)
  • GL_ARB_transform_feedback2 (supported since 8.0)
  • GL_ARB_transform_feedback3 (supported since 9.0)
Oh OpenGL 4.x...

• OpenGL 4.1 is 4.0 plus...
  • GL_ARB_ES2_compatibility (supported since 7.9-ish)
  • GL_ARB_get_program_binary (supported since 9.1)
  • “Increases in the required supported sizes for textures and renderbuffers.”
  • GL_ARB_separate_shader_objects (should be in 10.0)
  • GL_ARB_vertex_attrib_64bit
  • GL_ARB_viewport_array
Oh OpenGL 4.x...

- OpenGL 4.2 is 4.1 plus...
  - GL_ARB_texture_compression_bptc
  - GL_ARB_compressed_texture_pixel_storage
  - GL_ARB_shader_atomic_counters (should be in 10.0)
  - GL_ARB_texture_storage (supported since 8.0)
  - GL_ARB_transform_feedback_instanced (supported since 9.0)
  - GL_ARB_shader_image_load_store
  - GL_ARB_conservative_depth (supported since 8.0)
  - GL_ARB_shading_language_420pack (supported since 9.2)
  - GL_ARB_internal_format_query (supported since 9.1)
  - GL_ARB_map_buffer_alignment (supported since 9.1)
Oh OpenGL 4.x...

• All Mesa is missing is...
  • GL_ARB_draw_indirect
  • GL_ARB_gpu_shader_fp64 / GL_ARB_vertex_attrib_64bit
    • Big pile of work!
  • GL_ARB_shader_subroutine
    • Big pile of work!
  • GL_ARB_sample_shading
  • GL_ARB_tessellation_shader
    • Big pile of work!
  • GL_ARB_viewport_array
  • GL_ARB_texture_compression_bptc
  • GL_ARB_compressed_texture_pixel_storage
  • GL_ARB_shader_image_load_store
    • Big pile of work!