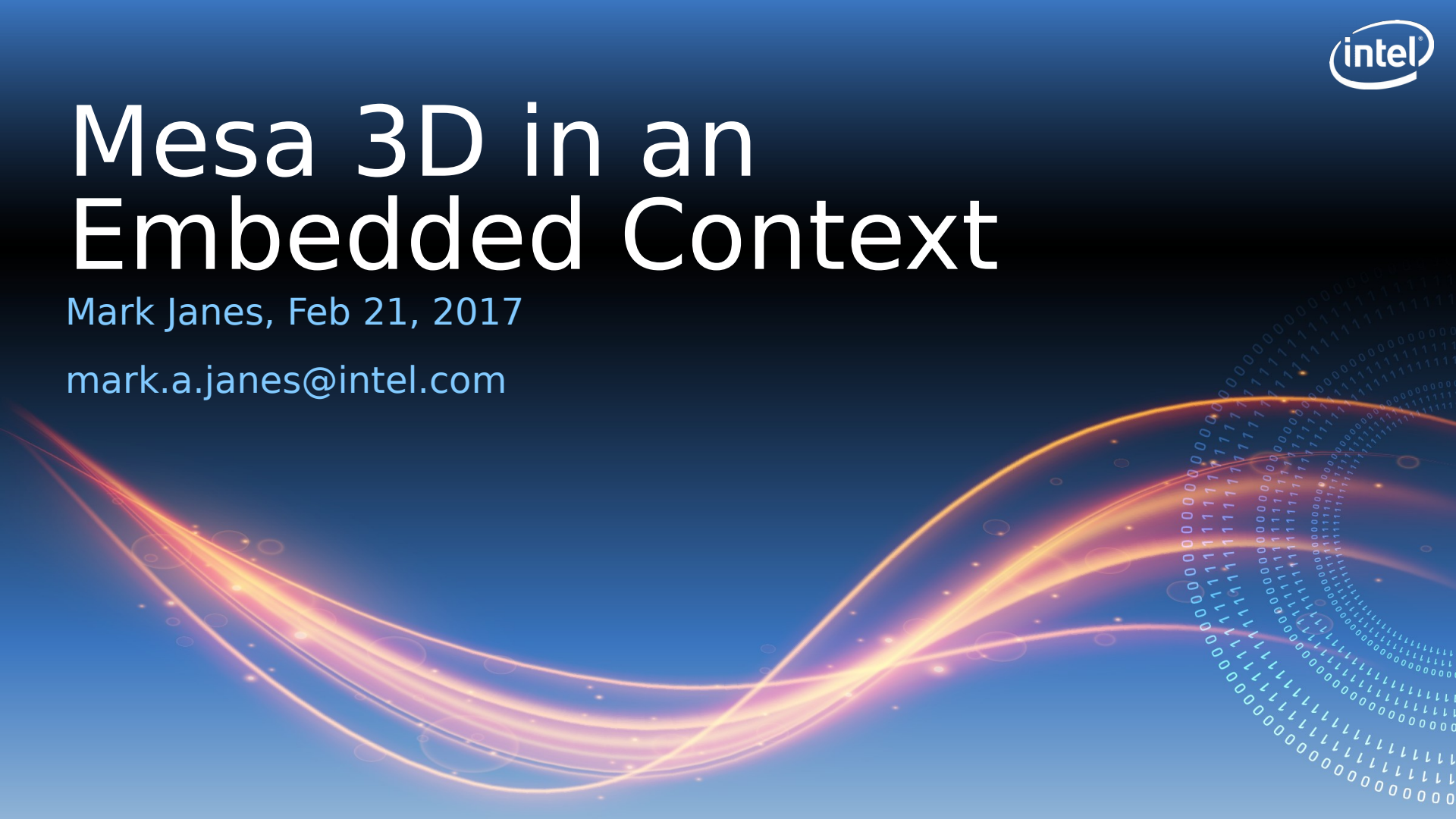

Mesa 3D in an Embedded Context

Mark Janes, Feb 21, 2017

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About me:

- Working on Linux platforms since 2004, with a background on embedded devices.
- Joined Mesa in 2015, working on performance tools and automation.

About Mesa:

- Community developed, commercially supported implementation of OpenGL and Vulkan APIs
- Multi-platform collaboration by several graphics silicon vendors
- Development model similar to the Linux Kernel

Project links

https://cgit.freedesktop.org/mesa/mesa/

https://lists.freedesktop.org/mailman/listinfo/mesa-dev

https://lists.freedesktop.org/mailman/listinfo/piglit

Channels #intel-gfx and #dri-devel on irc://chat.freenode.net

https://bugs.freedesktop.org/describecomponents.cgi?product=Mesa

Hardware supported by Mesa

Intel: https://01.org/linuxgraphics/community/mesa

AMD: https://www.x.org/wiki/RadeonFeature

Broadcom: https://github.com/anholt/mesa/wiki/VC4

VMWare: https://mesa3d.org/vmware-guest.html

Qualcomm Adreno*: https://github.com/freedreno

Vivante*: https://github.com/etnaviv

Nvidia*: https://nouveau.freedesktop.org/wiki/

* not vendor supported

Advantages of a source distribution

- Easy update of kernel and graphics driver
- Valgrind support
- GDB
- Git blame/rebase
- Custom extensions
- Enables you to solve your own integration problems

Intel’s Mesa support is greatly improved in 2017!

- OpenGL 4.5
- GLES3.2
- Vulkan 1.0

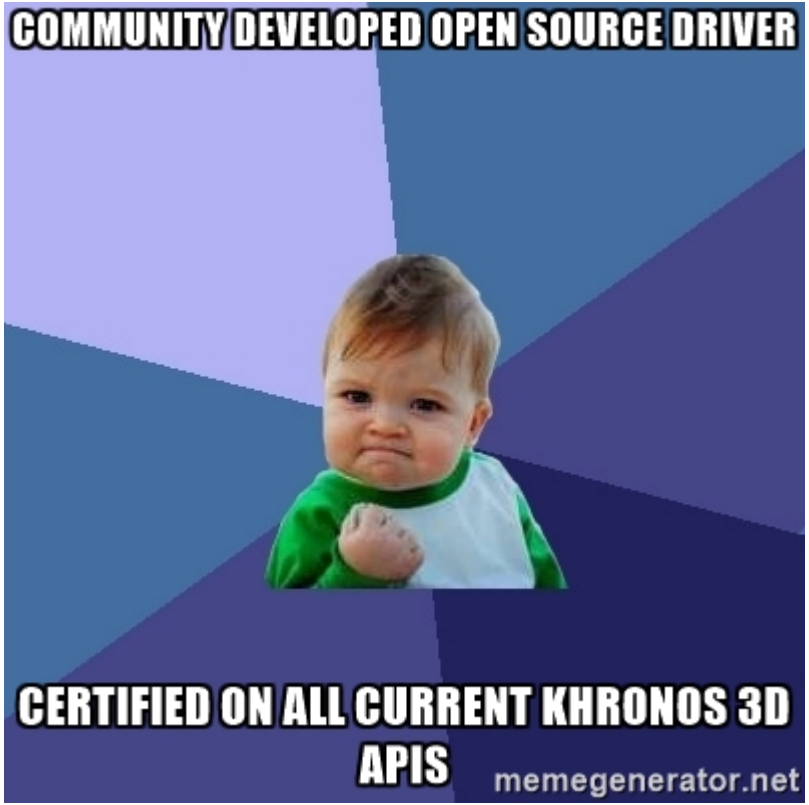
https://mesamatrix.net/

“Mesa Saw The Most Commits Last Year Since 2010”

– Phoronix, Jan 1, 2016

“Mesa Development Has Gone Wild This Year”

– Phoronix, Oct 14, 2016



Modest implementation size

	bytes
libdrm_intel.so.1.0.0	144832
libdrm.so.2.4.0	69664
libEGL.so.1.0.0	178000
libgbm.so.1.0.0	53384
libglapi.so.0.0.0	258720
libGLESv1_CM.so.1.1.0	25608
libGLESv2.so.2.0.0	56096
libGL.so.1.2.0	511024
libkms.so.1.0.0	19320
i965_dri.so	5727376
	7044024
libvulkan_intel.so	2209664

Other dependencies:

- libvulkan
- libexpat
- libffi
- libm
- libpciaccess
- libwayland-client
- libwayland-server
- libz
- libtxc_dxtn

Open source graphics stacks built on Mesa

- KMS Cube: https://github.com/robclark/kmscube
- Weston / Wayland
  - Yocto: https://01.org/yocto-project
    https://www.yoctoproject.org
  - Tizen: https://www.tizen.org
- Android: https://01.org/android-ia
- ChromeOS / Freon: https://www.chromium.org/chromium-os
- Every GNU/Linux desktop distribution

Mesa Tools

- Mesa environment variables: https://www.mesa3d.org/envvars.html
- Apitrace: http://apitrace.github.io/
- GpuTop: http://www.gputop.com/
- FrameRetrace: https://github.com/janesma/apitrace/wiki/frameretrace-branch
- Grafips: https://github.com/janesma/grafips/wiki
- Renderdoc: https://github.com/baldurk/renderdoc/wiki


Questions?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