THE IMPACT OF KHRONOS

- Twelve years of opening standards

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Jon Peddie Research

- Focus and emphasis on Digital Technology, Multi Media, and Graphics
- Consulting and market research - Advisor to industry leaders and financiers
- Bi-weekly report, various Digital Technology Market Studies
- Product testing and benchmarking
- The Business of Multimedia and Graphics
Time is the Enemy of Development

- Time to market is critical in a competitive market
- There is no more competitive market than the mobile phone market
- Proprietary systems lock out competition and impede time to market
- The need was clear and Khronos answered the call
The Need for a Single API Was Felt

- Khronos recognized the need for a graphics standard for the mobile industry and developed OpenGL ES, a streamlined version of OpenGL.

- There was a sense of urgency to get OpenGL ES done because the mobile industry was already starting to explode.
If Device A has API-X, and Device B has API-Y two versions of the App driver (and maybe the app) have to be written.

Either you employ twice as many people, or do one after the other.

Either way
- You lose
- Time is not on your side
Without Open There is Chaos

and we don’t have time for chaos

Time moved on and with it Khronos developed new and powerful APIs

- OpenCL
- OpenGL
- OpenGL ES
- WebGL
- WebCL
- COLLADA
- OpenVG
- OpenGL ES
- OpenMAX AL
- OpenMAX IL
- EGL
- StreamInput
- Vision
- Other
Today OpenGL ES is adopted by every OS

Google has released the Android Native Developer Kit (NDK) and unlocked native library support and direct access to graphics interface OpenGL ES 2.0.

And not just Google – every other mobile OS has also adopted OpenGL ES
The Deployment of OpenGL ES in Smartphones

Every pixel on EVERY phone is OpenGL ES generated

Smartphones, CAGR 2010-2016: 16.54%
OpenGL ES penetration 3.91%

Every pixel on an iPhone is OpenGL ES
Use of OpenGL ES in Tablets

Intel >8-in CAGR 10-16: 52.34%
ARM >8-in CAGR 10-16: 38.78%
ARM <8-in CAGR 10-16: 97.86%

100% from the beginning!
Why Are Khronos APIs So Popular?

- They work, and work really well
  - Dozens of the industry’s best engineers designed, built, and tested them
- They are light-weight, not memory hogs
- They behave well and play nice with other APIs and Apps – Khronos APIs are good (model) citizens

And best of all:
They are **FREE**!
Time Does Not Stand Still

- Khronos is well established with a record of success
- Significant market growth is being propelled by Khronos APIs today
- **AND** - Khronos is addressing emerging opportunities - like vision and sensor
The Time Machine - History Repeats

- Khronos created a complete ecosystem of standards that has enabled developers to create a billion-dollar industry with magical products.

KITE will generate a cohesive, standardized, educational community and create a new generation of students with high quality understanding of Khronos graphics technology.
JOIN THE INTERNATIONAL ORGANIZATION FOR APIs
That Powers all New Mobile Phones and Tablets
Thank you

Chasing pixels – *finding gems*

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