OpenCL and Mobile Graphics & Media

Neil Trevett
Vice President, NVIDIA
OpenCL Chair | Khronos President
Who is the Khronos Group?

• An industry consortium creating open API standards
  - By the industry, for the industry - founded eight years ago - any company is welcome to join

• Enables software to leverage silicon acceleration
  - Reducing software fragmentation and exposing cutting-edge silicon functionality

• Strong commercial focus – we are in this to build markets
  - Aim is to enable members and the wider industry to grow business opportunities

• Commitment to royalty-free standards
  - Making money from enabled products – not from the standards themselves

Enabling strategic business development through open standards that enable silicon and software to interoperate
“Close-to-the-Silicon” Standards

- Khronos creates “Foundation-Level” acceleration APIs
  - Needed on every platform to support an ecosystem of middleware and applications
- Low-level access to processor silicon
  - Designed with strong silicon vendor participation
- Cross-vendor software portability
  - API abstractions just high enough to hide implementation specifics
- Khronos has an established focus on graphics/media
  - 3D, vector 2D, video, imaging, audio APIs...
- ...OpenCL broadens focus to Compute
  - Enabling applications to access the power of heterogeneous parallel computing silicon

Khronos APIs create the foundation of an ecosystem that enable applications to be PORTABLE and ACCELERATED on diverse silicon platforms
The Khronos API Ecosystem

- **Desktop 3D Ecosystem**
- **Collada**
  - 3D Asset Interchange Format
- **OpenGL**
  - Cross platform desktop 3D
- **OpenCL**
  - Heterogeneous Parallel Computing
  - Parallel computing and visualization in scientific and consumer applications
- **OpenGL ES**
- **OpenMAX**
  - Streaming Media and Image Processing
- **OpenVG**
  - Vector 2D
- **OpenSL ES**
  - Enhanced Audio
- **EGL**
  - Surface and synch abstraction
- **OpenKODE**
  - Integrated Mixed-media Stack
  - Streamlined APIs for mobile and embedded graphics, media and compute acceleration
- **OpenKPEG**
  - Mobile OS Abstraction

_Umbrella specifications define coherent acceleration stacks for mobile application portability_

_Hundreds of man years invested by industry experts to create coordinated ecosystem_
### Agenda for Today’s Session

- All the slides you see today will be posted by the end of the day at [www.khronos.org](http://www.khronos.org)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Company</th>
<th>Start</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Neil Trevett</td>
<td>NVIDIA</td>
<td>13:00</td>
<td>Khronos Overview and Introduction to OpenCL</td>
</tr>
<tr>
<td>John Roberts</td>
<td>NVIDIA</td>
<td>13:15</td>
<td>Overview of OpenCL Specification</td>
</tr>
<tr>
<td>Alastair Donaldson</td>
<td>Codeplay</td>
<td>13:55</td>
<td>Tools for OpenCL</td>
</tr>
<tr>
<td>Kari Pulli</td>
<td>Nokia</td>
<td>14:15</td>
<td>OpenCL in handheld devices</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>ALL</td>
<td>14:35</td>
<td>Audience Questions</td>
</tr>
<tr>
<td>Break</td>
<td></td>
<td>14:45</td>
<td>DEMOS</td>
</tr>
<tr>
<td>Neil Trevett</td>
<td>NVIDIA</td>
<td>15:15</td>
<td>Introduction Khronos Mobile Ecosystem</td>
</tr>
<tr>
<td>Dave Shreiner</td>
<td>ARM</td>
<td>15:50</td>
<td>Introduction to OpenGL ES</td>
</tr>
<tr>
<td>Tom McReynolds</td>
<td>NVIDIA</td>
<td>16:25</td>
<td>OpenGL ES in Automotive and Embedded Markets</td>
</tr>
<tr>
<td>Q&amp;A</td>
<td>ALL</td>
<td>16:50</td>
<td>Audience Questions</td>
</tr>
<tr>
<td>End of day</td>
<td></td>
<td>17:00</td>
<td>DEMOS</td>
</tr>
</tbody>
</table>
Thank You for Coming!

• Any questions?

• Slides at www.khronos.org