Interactive Ray Tracing Quake 4: Ray Traced

- Research project to use real-time ray tracing for a current computer game
- Benefits of ray tracing:
 - Physically correct reflections
 - Physically correct refractions
 - Per pixel exact shadows
 - Higher detailed worlds
 - Nearly linear scaling with the number of cores / CPUs



Multiple reflections within reflections



Performance scaling of ray tracing with Quake 4: Raytraced

Ray tracing: The future for games!

Research at Intel www.intel.com/research

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Interactive Ray Tracing Ray Tracing on Handheld Consoles

• Frame rate in ray tracing is linearly dependent on the number of pixels

• Example:

- 1280x720: 30 fps
- 480x272: 360 fps
- 256x192: 563 fps
- Benefits of ray tracing at handheld consoles:
 - Same benefits as on PC +
 - Easier cross-development between PC and handheld versions of a game



Frame rate at different resolutions

- Gaming experience with the same high image quality as on the PC, just in smaller resolution on a smaller display
- Once ray tracing is established in PC games it is possible to use it with lower scaled hardware on handheld consoles.
- Future of handheld consoles?







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