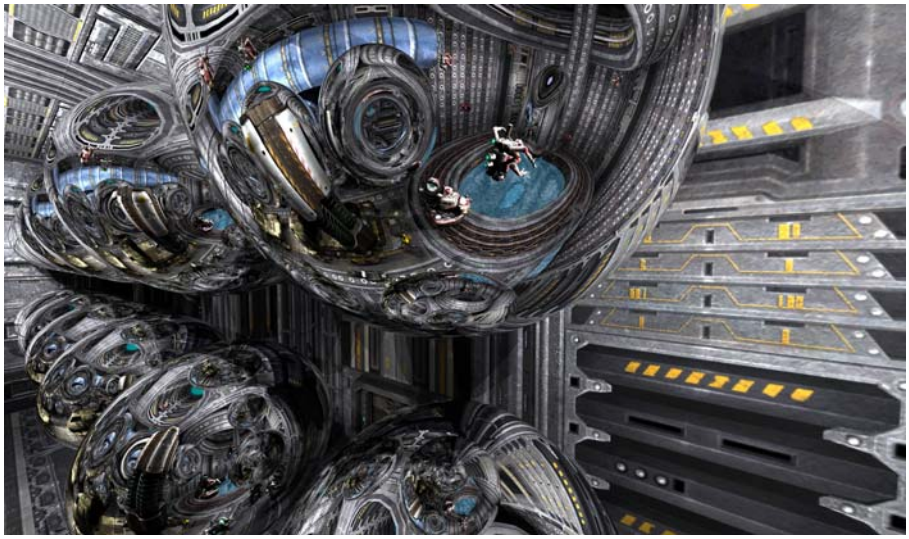
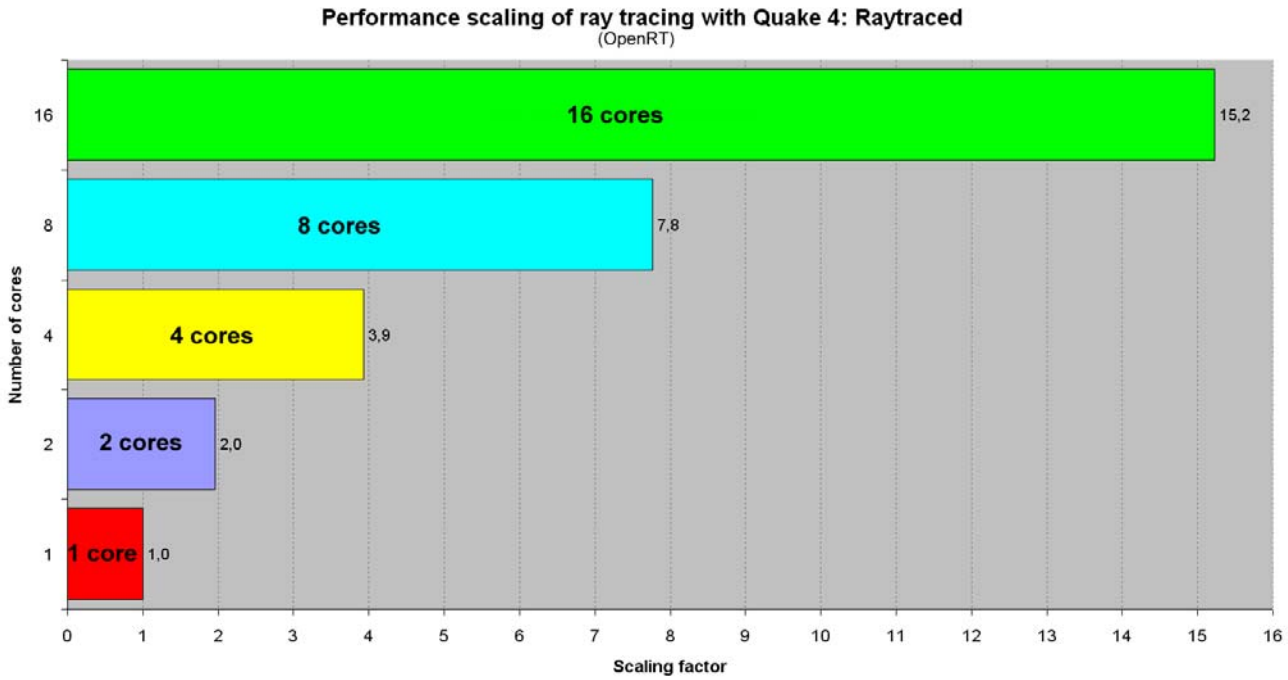
Interactive Ray Tracing
Quake 4: Ray Traced

- 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



- Ray tracing: The future for games!

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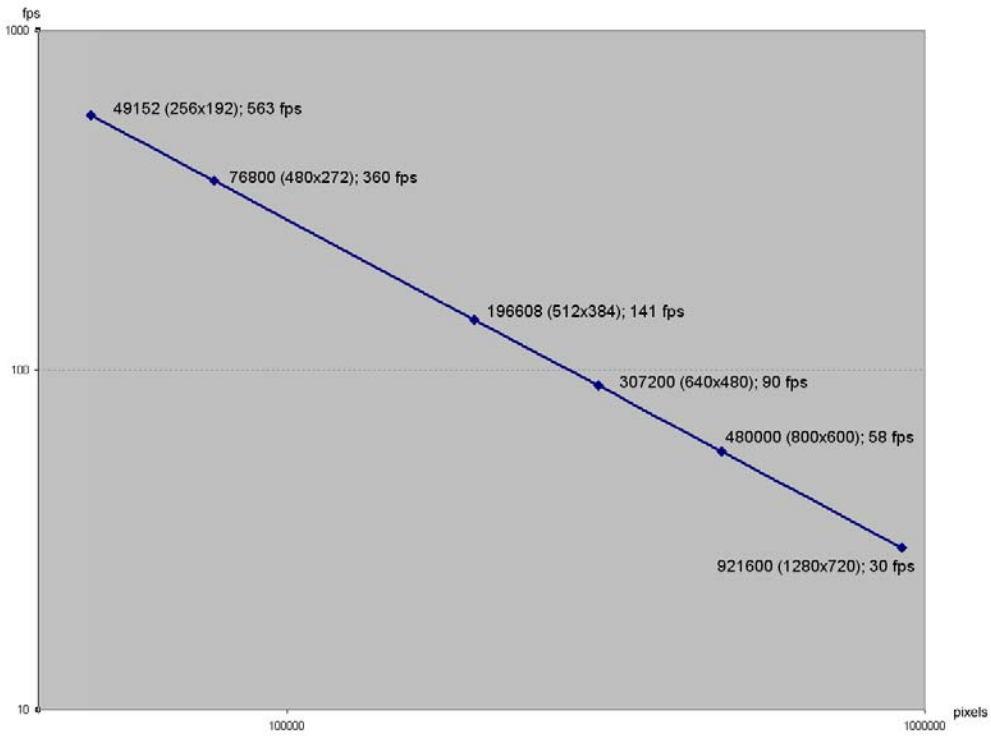
Interactive Ray Tracing
Ray Tracing on Handheld Consoles

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

- Example:
  - 1280x720: 30 fps
  - 480x272: 360 fps
  - 256x192: 563 fps



Frame rate at different resolutions

- Benefits of ray tracing at handheld consoles:
  - Same benefits as on PC +
  - Easier cross-development between PC and handheld versions of a game
  - 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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