



# **IMGD MQP Interests 2012-2013**

by Emmanuel Agu

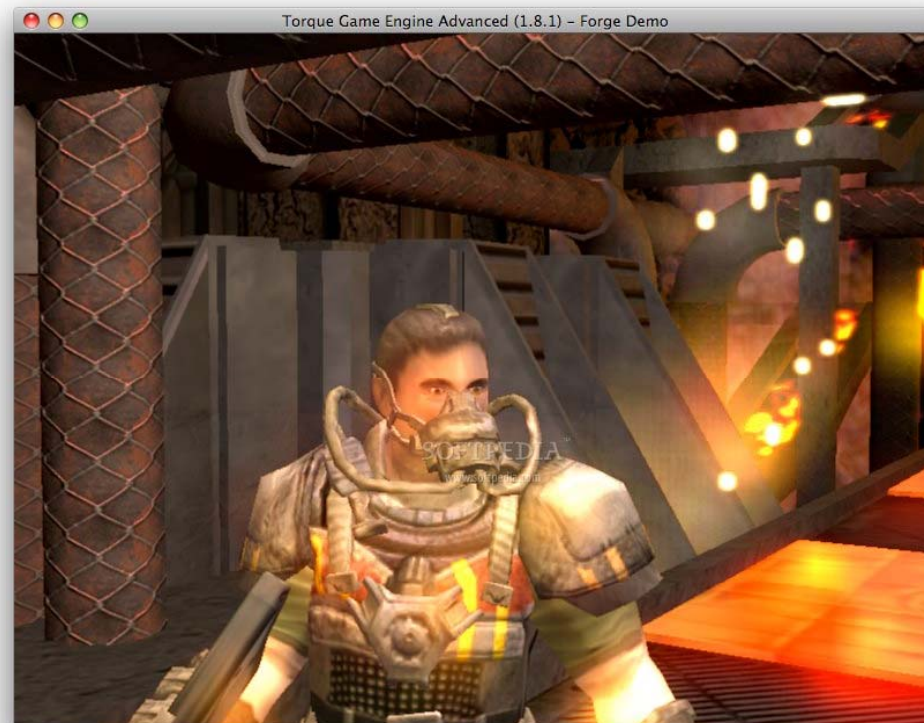


## Project Idea

- **Ogre3D:** Open source game engine
  - <http://www.ogre3d.org/>
- **Project:** Implement emerging *physically-based* graphics algorithms in Ogre
- Implementations will probably be shader-based
- Physically-based?
  - Light propagation obeys laws of physics
  - New cooler effects possible

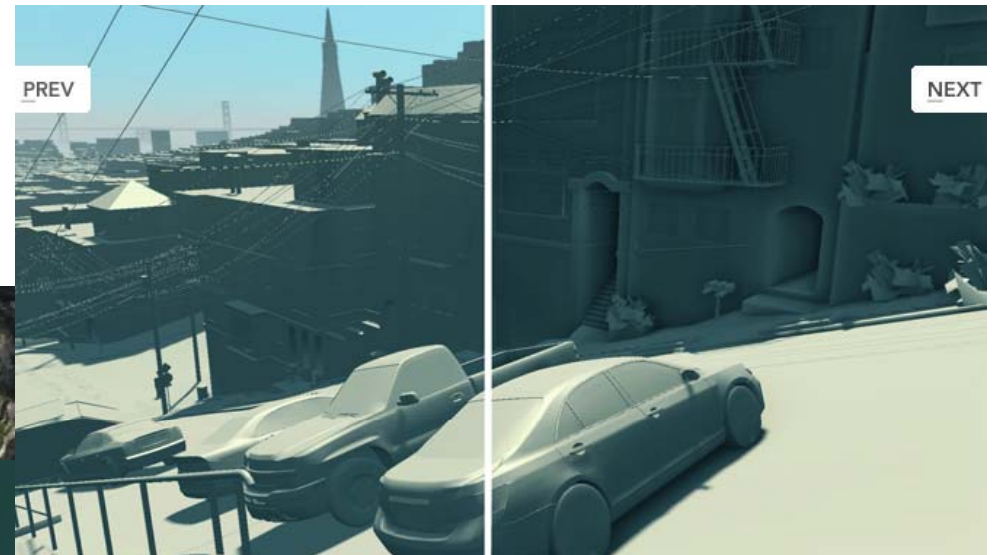
## Project Idea

- Non-GI old game engine: Empirical graphics models, not physically based
- Graphics look fake
- Example: Torque 3D



# Project Idea

- New game engine: Crysis
- Physically-based
- Closed source,
- Commercial



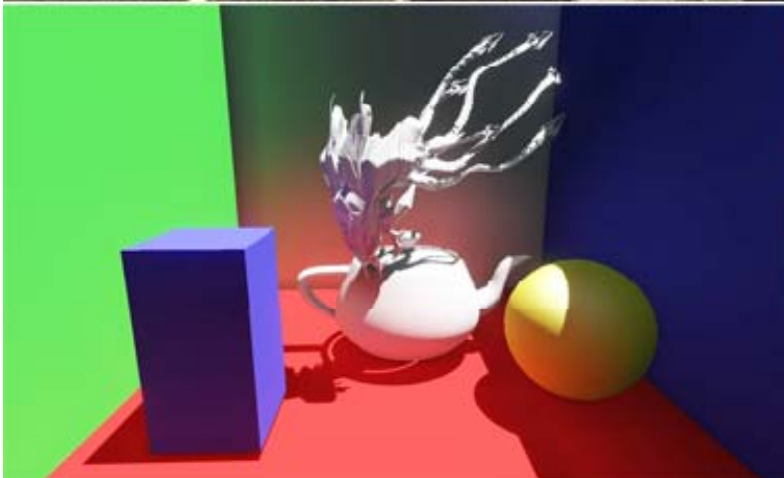


## Project Outline

- NEW real-time global illumination approximation algorithms
  - Spherical Harmonic Lighting
  - Light Propagation Volumes
  - Screen Space Ambient occlusion
  - Time of Day modelling

## CryEngine 3:GI with Light Propagation Volumes

- State-of-the-art game engine
- Real-time simulation of massive, indirect physically-based lighting



# Time Of Day





## Project Outline

- Other potential features
  - Physically-based ocean, trees, natural scene elements
  - New reflectance models, materials,
  - Procedural rendering
- Scope of the Work
  - Pick elements interesting to you
  - Implement it in Ogre



## Contact/More info

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