

# Introduction

# Graphics applications

- 2D drawing
- Drafting, CAD
- Geometric modeling
- Special effects
- Animation
- Virtual Reality
- Games
- Educational tools
- Surgical simulation
- Scientific and information visualization
- Many more!

# Graphics areas

- **Modeling** - mathematical *representations* of physical objects and phenomena
- **Rendering** - creating a *shaded image* from 3D models
- **Animation** - creating motion through a sequence of images
- **Simulation** - physics-based models for modeling dynamic environments
- **Many others!**

# Modeling



Talton et al., 2011

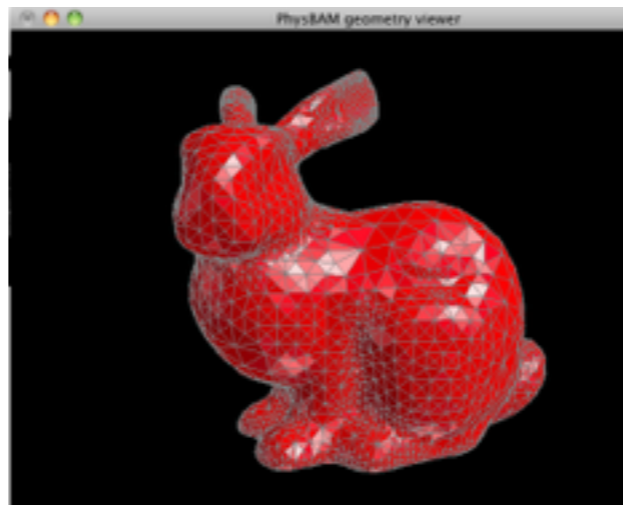
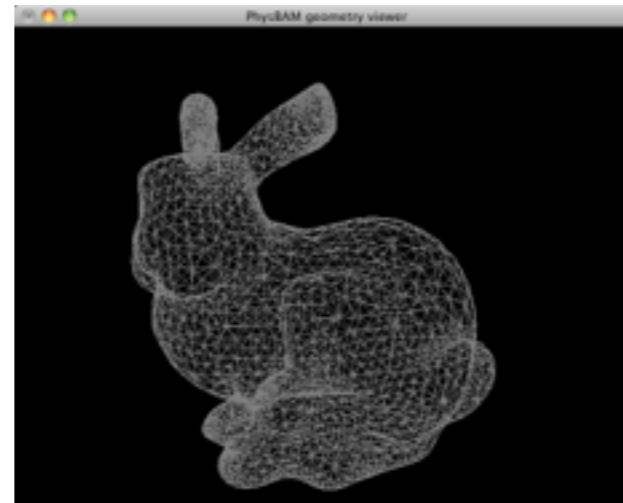
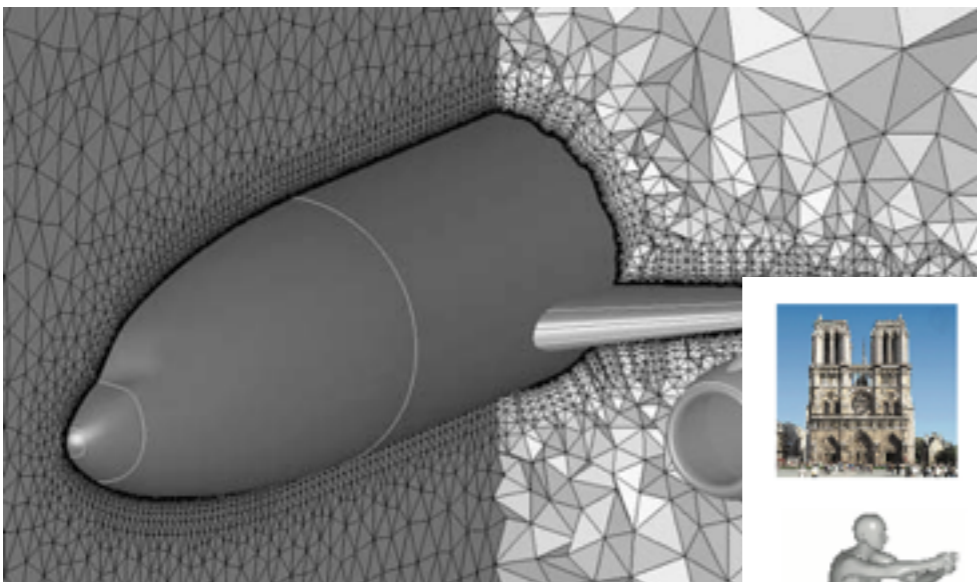


Figure1: Teddy in use on a display-integrated tablet.



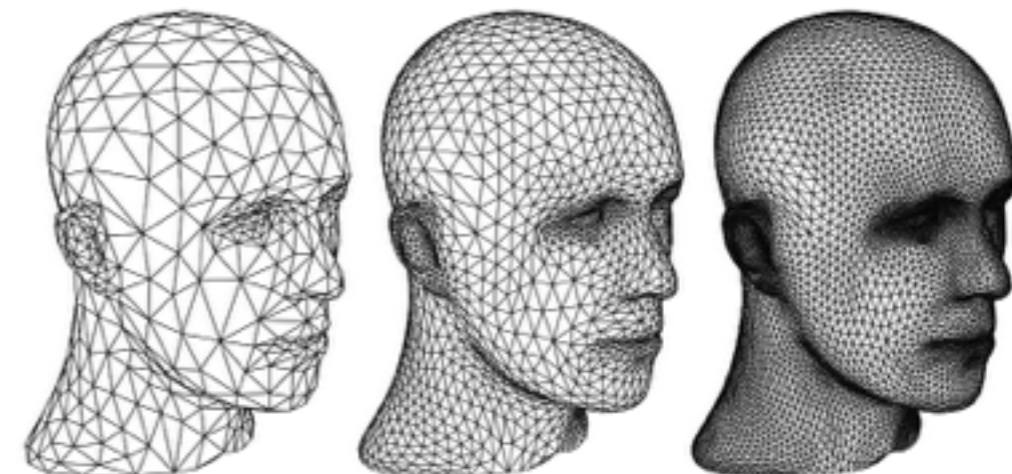
Igarashi et al., 2007



CFD Technologies

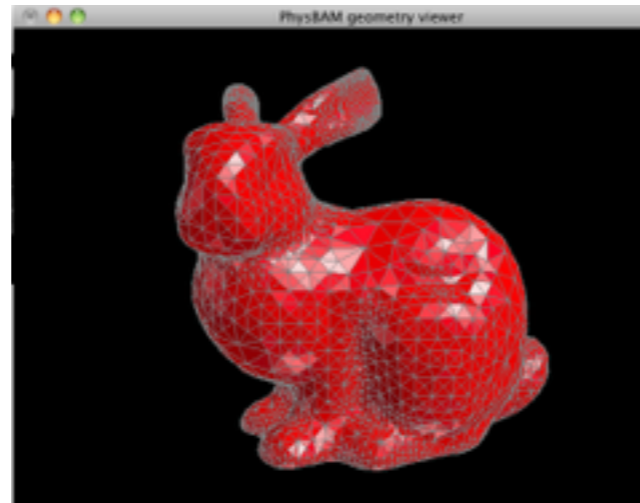
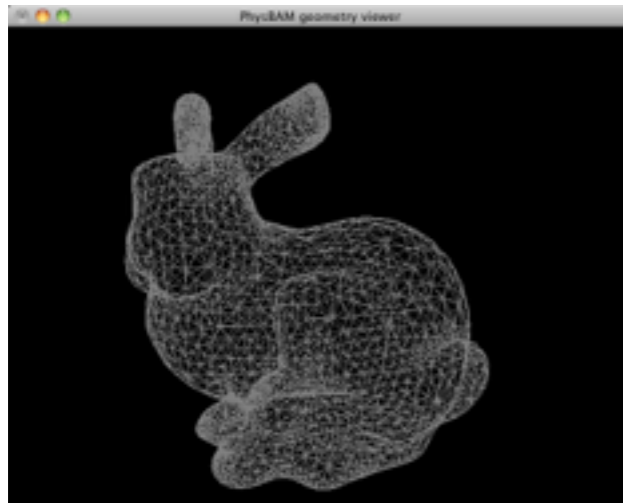


Bronstein et al., 2011



Schröder, 2000

# Rendering



Henrik Wann Jensen



# Animation



Sleeping Beauty, Disney, 1959



Adventures of Tintin, Weta 2011

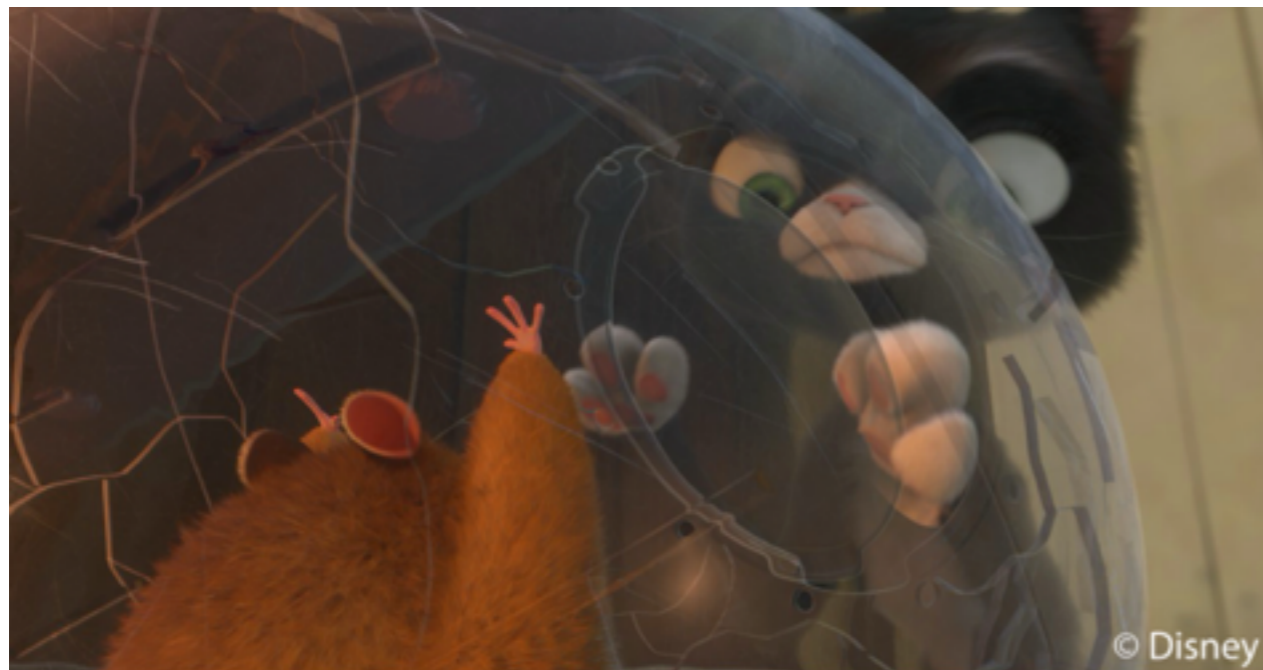


Monsters Inc, Pixar, 2001



Life of Pi, 2012

# Simulation







Firestorm

Harry Potter and the Half Blood Prince

Industrial Light + Magic



**fluid simulation in Pixar's *Ratatouille***

# Other areas...

- Interactivity (HCI)
- Image processing
- Visualization
- Computational photography

