Scenegraphs and Engines
Choosing the right libraries is a difficult process

- Very different target applications
- Different capabilities
- Underlying Graphics APIs

Needs to fit the content pipeline

- Important for application development
- Not important for research (though convenient)
Choosing the right libraries is a difficult process

- Very different target applications
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Needs to fit the content pipeline

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Typical Content Pipeline

- We need:
  - Content creation tools
  - Exporters
  - Scenegraph/Engine

MechAssault 2 content pipeline
DCC tools

- Only “real” open source option: *Blender*
- Everything you need for Game/Movie production
  - Modelling/Rigging
  - Animation
  - Rendering/Compositing
- Contains complete game engine+editor
  - Fully integrated with UI
- Immense feature list causes steep learning curve!
Blender
Easy to use subdivision surface modeller
Textures

- Gimp: Full featured image editing
Scenegraphs/Engines

- Scenegraphs deal with Rendering
- Engines deal with
  - Rendering
  - Physics
  - AI
  - Audio
  - Game logic
  - ...

Vienna University of Technology
OpenScenegraph

- “Inofficial” Scenegraph of OpenGL
  - Up to OpenGL 4.x
  - Very clean design
  - Very high performance
  - High portability (even mobile!)
  - Manipulators

- Targeted to
  - VR
  - Application
  - Visualisation
“Game” and Simulation-Engine, integrates

- OpenScenegraph
- OpenDynamics Engine
- Character Animation Library
- OpenAL (Audio)
- Game Networking Engine
- Tracker
- Editor
Open Source Graphics Engine

- Highly active community
- Strong modular design
- Bindings/Implementations in C++, Java, C#, Python, Ruby
- State of the art rendering
- Abstracts DirectX and OpenGL
- Combines with a lot of other libraries
- Build your own game engine!
OGRE

- Countless tools/addons
- Very extensible
- “Higher order” render management
  - state management, spatial culling, dealing with transparency
- Proven, stable engine used in several commercial products
- Everything you need to make a computer game!
Scenegraphs

Open Source delivers many choices:

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- Many, many others...

- 3D Engine Database/Search Engine:
  - http://www.devmaster.net/engines/
Tips and Tricks

- Learn one of the major DCC Programs
  - *Blender*, Maya, 3DSMax, Softimage XSI, Cinema4D, Lightwave
    - Takes time and is sometimes painful

- Learn one of the major scenegraphs/engines
  - Fast implementation of small projects
  - Reference Design/Implementation

- Choose software on
  - Previous knowledge/ Programming Language
  - Required features
  - Application content