

Scenegraphs and Engines



Application

Scenegraph

Windows/Linux

OpenGL

Hardware



- Choosing the right libraries is a difficult process
 - Very different target applications
 - Different capabilities
 - Underlying Graphics APIs

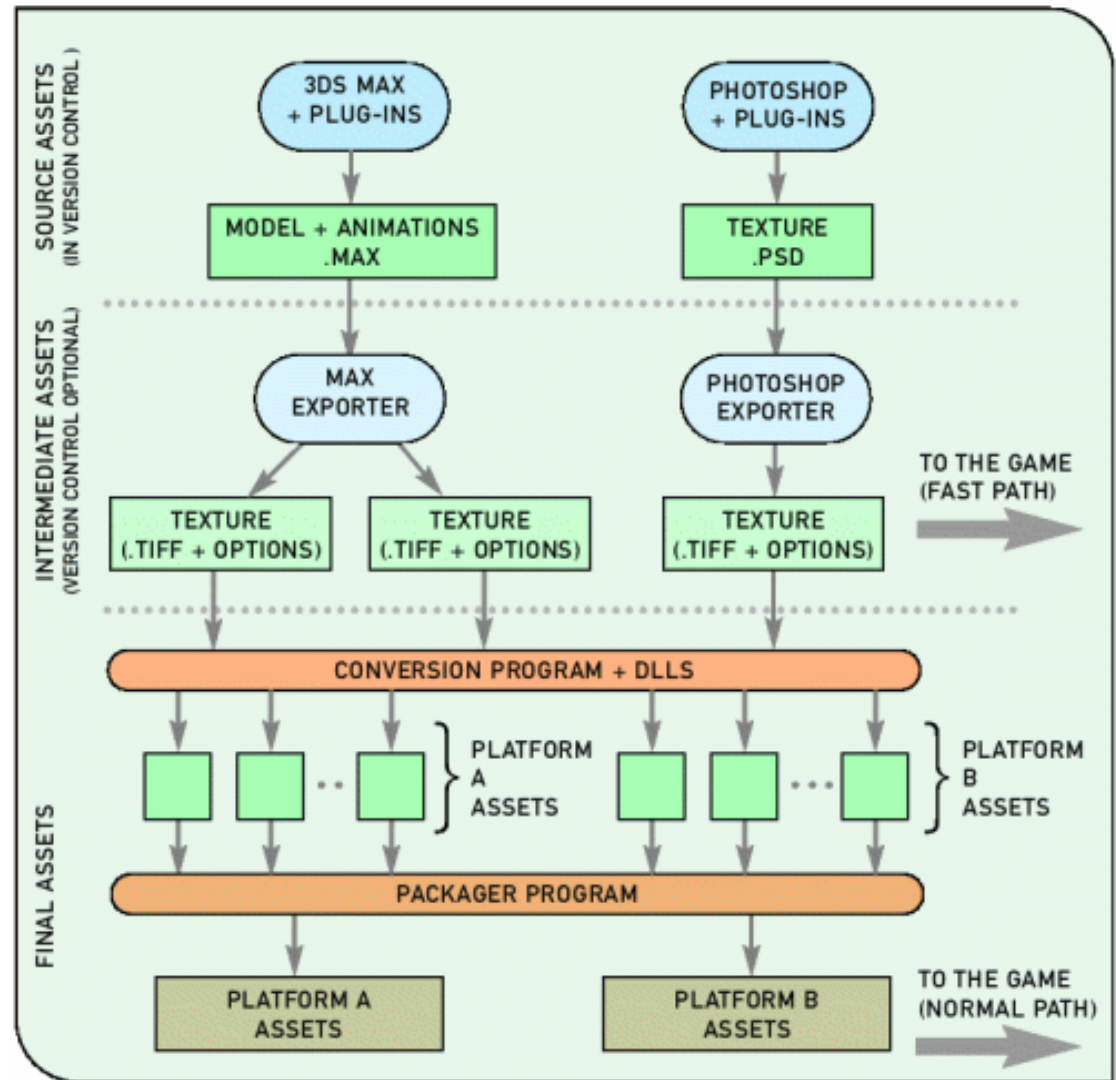
- Needs to fit the content pipeline
 - Important for application development
 - Not important for research (though convenient)



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 - Very different target applications
 - Different capabilities
 - Underlying Graphics APIs/Operating Systems
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- We need:
 - Content creation tools
 - Exporters
 - Scenegraph/Engine



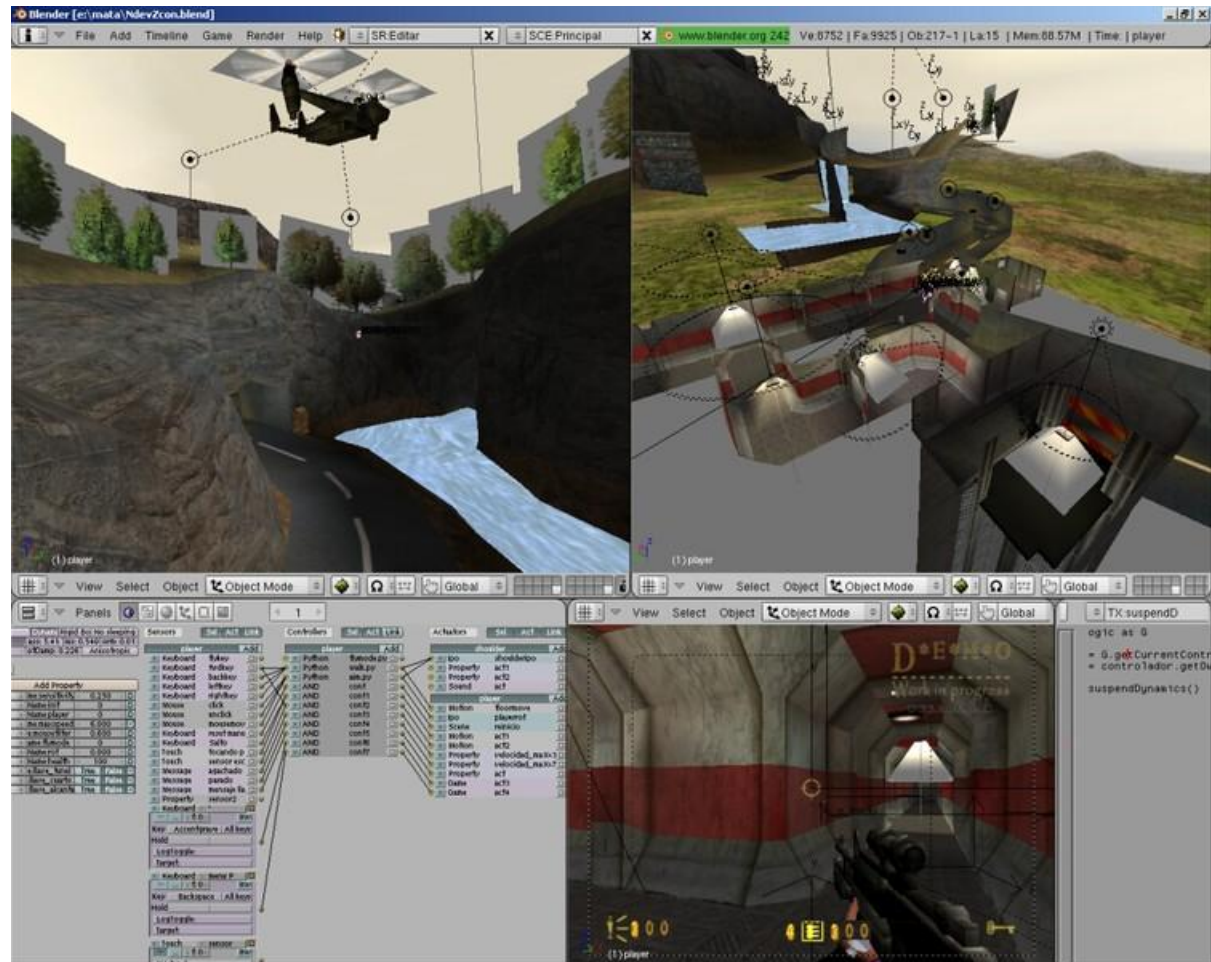
MechAssault 2 content pipeline



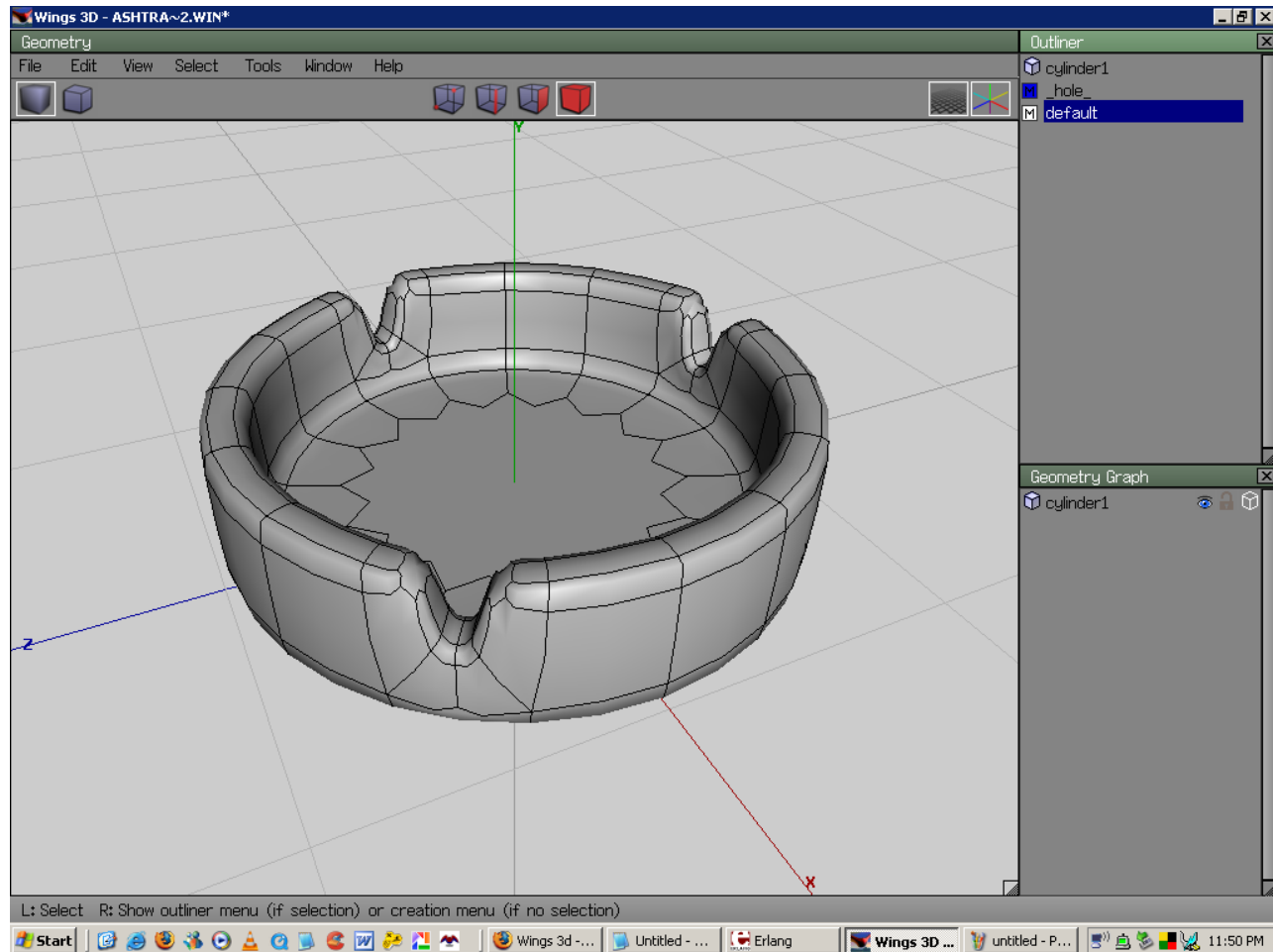
- Only “real” open source option: *Blender*
- Everything you need for Game/Movie production
 - Modelling/Rigging
 - Animation
 - Rendering/Compositing
- Contains complete game engine+editor
 - Fully integrated with UI
- Immense feature list causes steep learning curve!



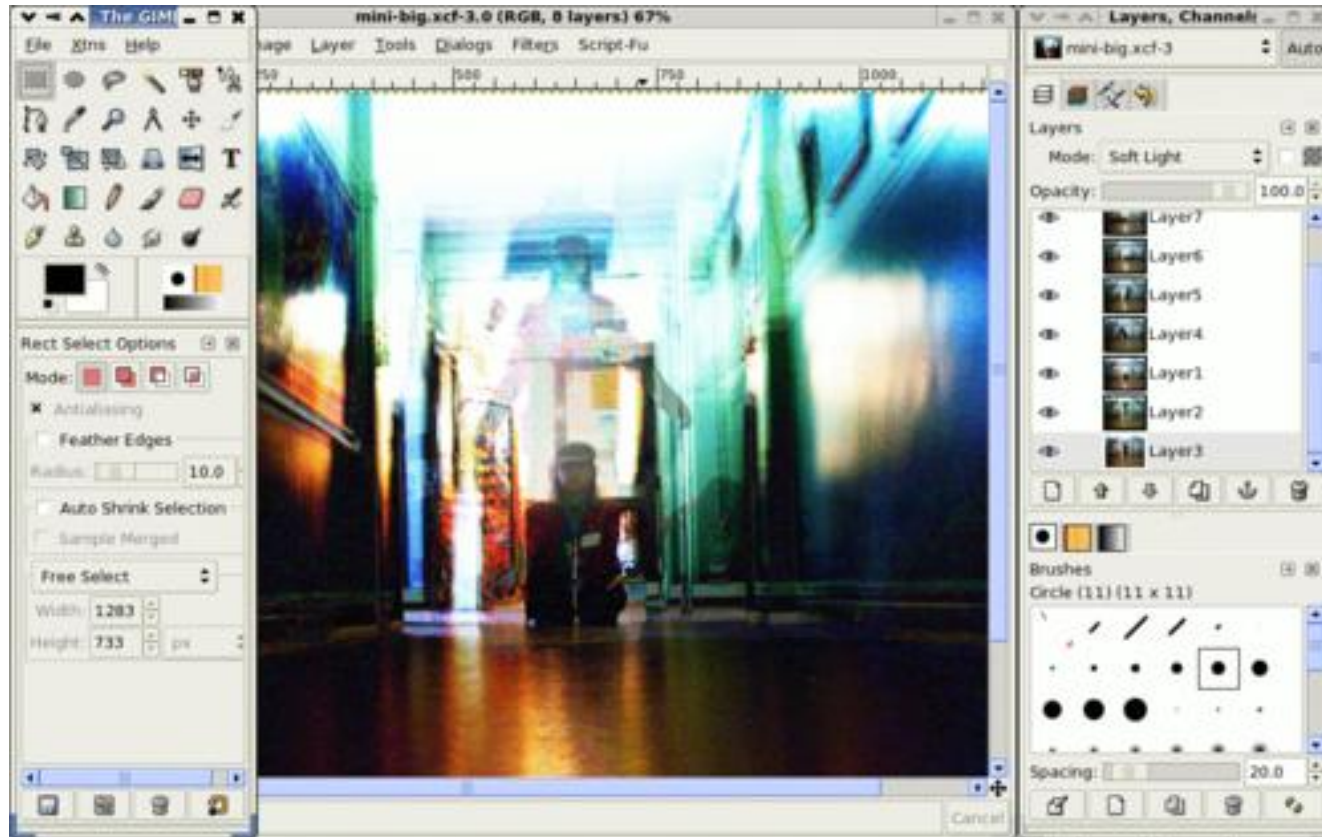




- Easy to use subdivision surface modeller



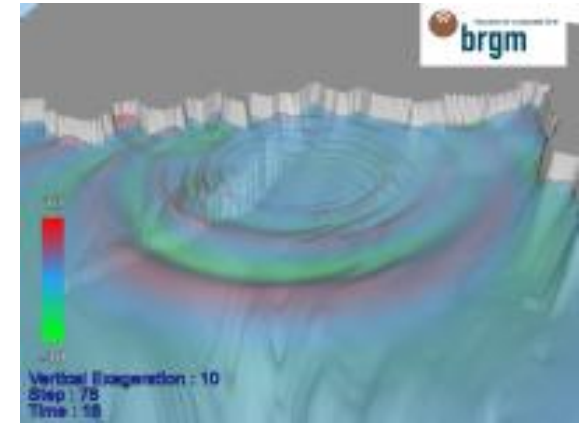
- Gimp: Full featured image editing



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



- “Inofficial” Scenograph 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!



- 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!



- Open Source delivers many choices:

OGRE

OpenScenegraph

jME (Java)

OpenSG

The Nebula Device 2

C4 Engine

Irrlicht

Crystal Space

Panda3D

Blender Game Engine

Reality Factory

RealmForge

- Many, many others...
- 3D Engine Database/Search Engine:
 - <http://www.devmaster.net/engines/>



- 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

