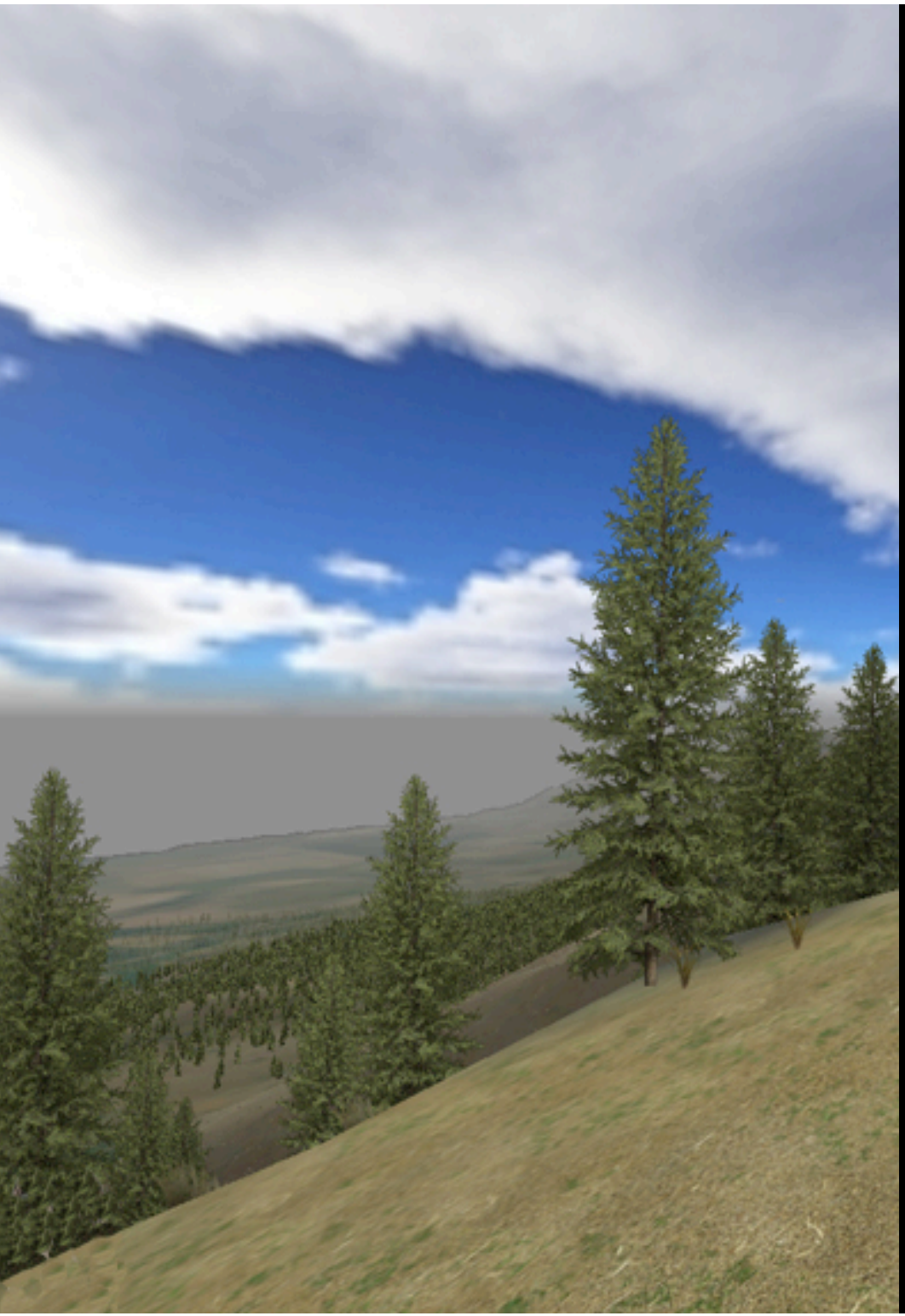


Games Get Serious

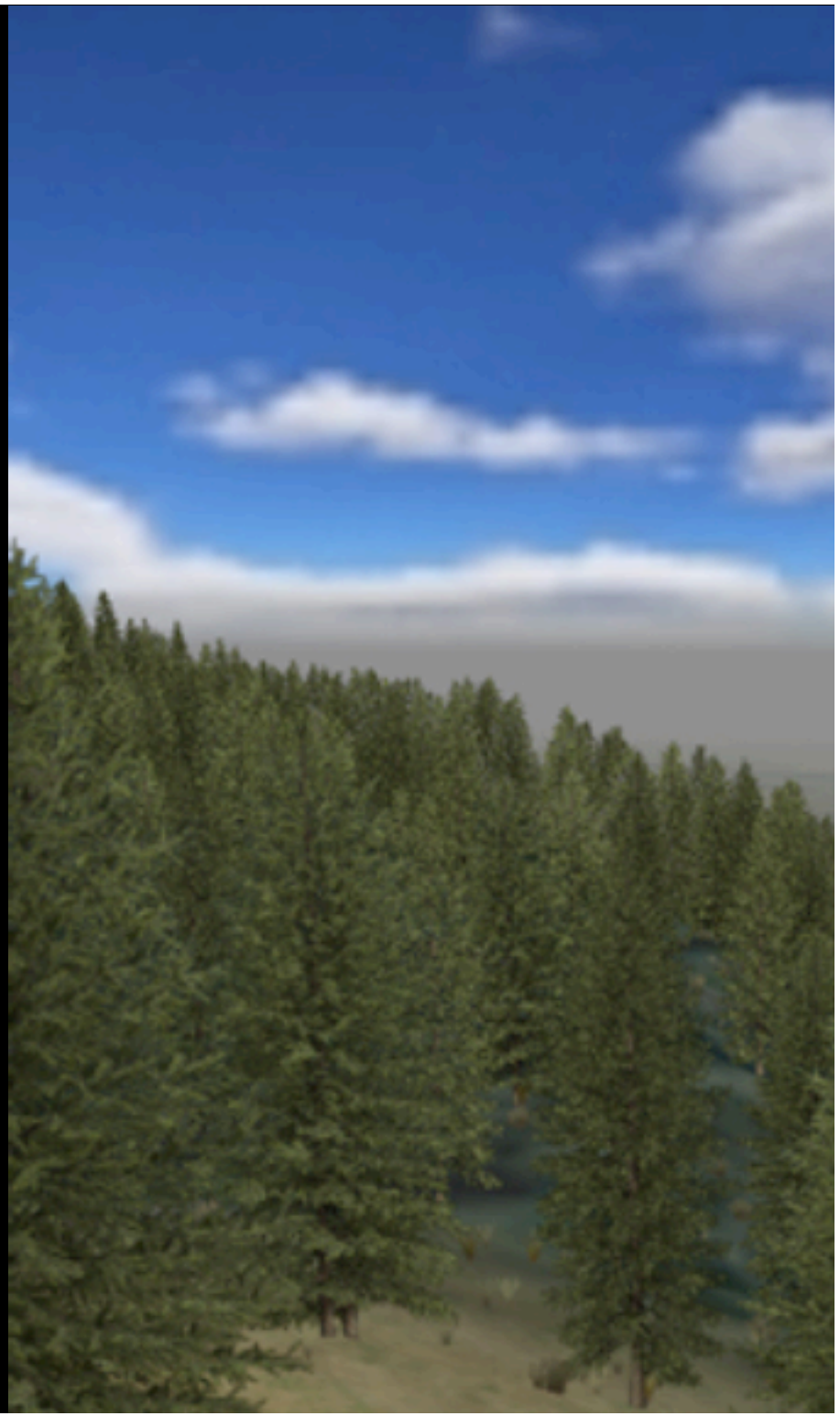
Computer Games for Visualization and More

by Tim Holt

The Story

- Historically GIS leads visualization and understanding of “real world” data
- Growing data complexity causes us to advance our methods to meet the demands
- We are challenged to effectively utilize and understan our “real” data as its complexity grows
- Short of actually entering the real space, 3d visualization offers one solution
- Consider computer game concepts and technology to enable visualization and interaction in 3d virtual space

Computer games are a powerful and driving force in 3d visualization and interaction today



Games are the driving force in visualization technology today

- Game engine technologies such as Unreal 3 and game consoles push astounding levels of graphical compute power
- GPU technologies from ATI and NVidia – more power on the graphics card than the motherboard
- All fueled by the consumers demand for bigger better, faster and cooler – to the tune of $7B in 2005

Game players exhibit highly sophisticated behavior

- Social dynamics involving collaboration, cooperation, planning and a host of other “serious” behaviors
- Complex interactions in simulated worlds – all with several fingers and a mouse
- Game players are innovators and explorers


World of Warcraft
Catfoot
Health 943 / 943
Energy 100 / 100
35
Lake Nazferiti
Catfoot
Level 35 Night Elf Rogue
Base Stats
Melee
Strength: 46
Agility: 163
Stamina: 57
Intellect: 34
Spirit: 41
Armor: 904
Weapon Skill 174
Damage: 62 - 87
Speed: 1.90 / 1.60
Power: 259
Hit Rating: 0
Crit Chance: 11.49%
Character
Reputation
Skills
PvP
To [Cambo]: Now you got Bantara circling that tower too?!
[Cambo] whispers: NO
[Cambo] whispers: lol
[1. General] [Laurarose]: look on your map at the northwest
[Cambo] whispers: how long you on for?
XP 12504 / 67100

Yet this all comes from COTS and unsophisticated users

- Who needs SGI when you've got Dell or an XBox360?
- Who needs a users manual when you've got WASD?
- Who has thousands of dollars for specialized packages, when Fred Meyer has Half Life 2 for $29.99

Games offer a path to visualization and interactivity to solve “serious” problems

Government and medicine lead the use of Serious Games

- America's Army, a multi-million dollar recruiting and training platform leads the way
- Medical simulations allow doctors, nurses and EMTs to practice key decision making aspects of medicine
- NASA has future plans for “NASA Themed” games for simulation, education and entertainment

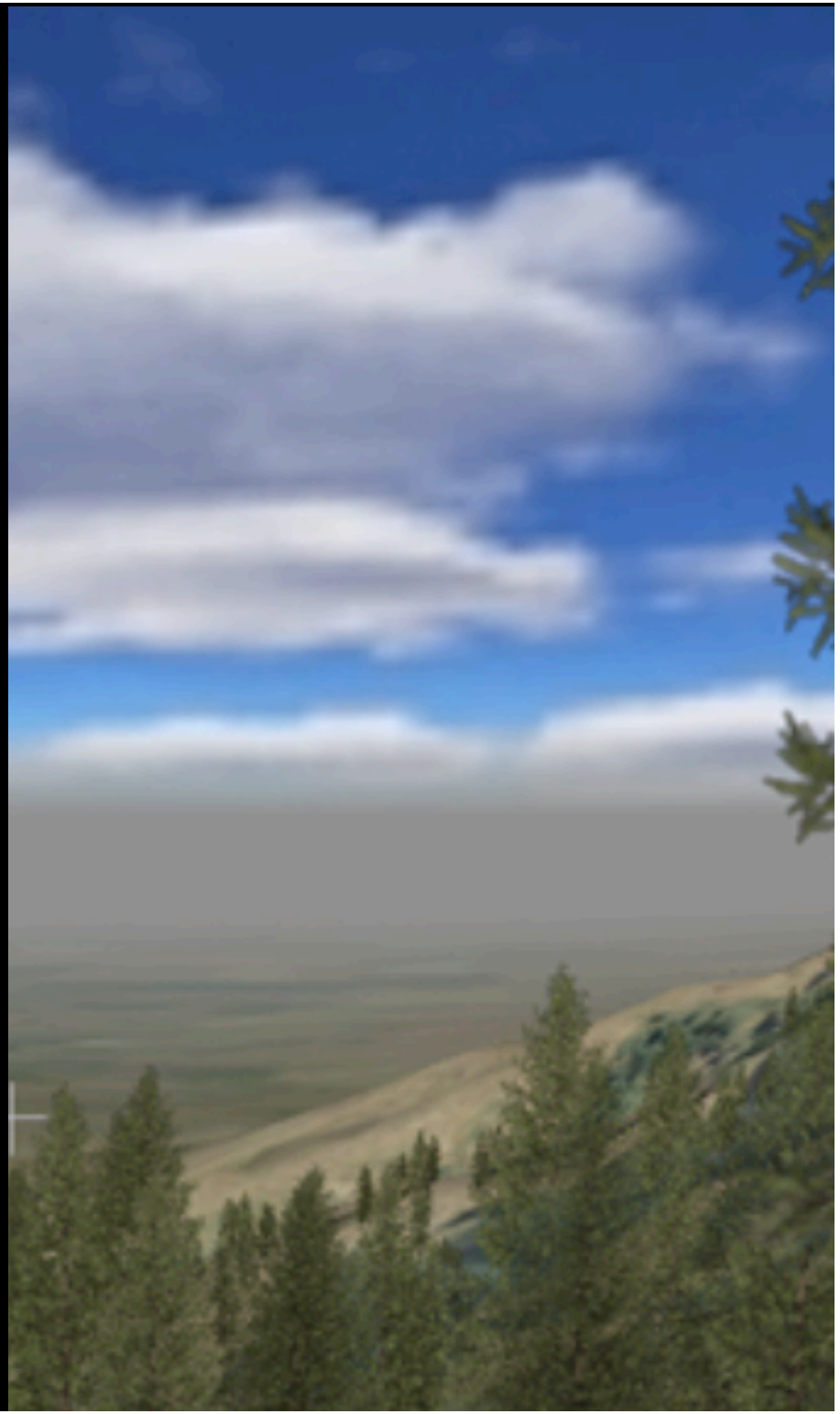
MMOs and the rise of social interaction dominated games

- World of Warcraft and Second Life are the new games that push the envelope of massive persistent interaction in a shared space
- Games such as Second Life have become new virtual territories where people are teaching, educating and interacting online
- Other education and training applications are just beginning to show up on the virtual horizon

And here at Oregon State University, work includes...

- GNNViz, a large scale forest visualization project funded by the Joint Fire Sciences Program
- The Graphics and Imaging Technologies Lab in EECS , COAS, E-campus
- “Your Name Here”

Computer game technology is accessible, modifiable, and can be utilized for new uses beyond the typical gaming application



Traditional approaches to game development are very expensive

- Licenses for high end game engine technologies can cost $500k to over $1M
- This is an unattainable expenditure to most any research group or institution
- Not many companies are interested in working with non-entertainment applications

However, modding is a viable type of game development

- Commercial off the shelf games are used as th starting point for development
- Developers modify their content to create mashups and new content using free and commercially available tools
- Mods are allowed, enabled and encouraged by game companies

Open source and inexpensive technologies are also available

- Open source projects such as Irrlicht, Delta3D and Ogre 3D provide starting points for game development
- Alternate business model offerings such as the Multiverse MMO engine
- Low cost “budget friendly” technologies from Garage Games, Realm Crafter and others

http://www.devmaster.net/engines/

Framing the Resolution

- Data complexity threaten us, limiting our ability to understand data and share knowledge
- Computer games provide highly evolved concepts and technologies for visualization and interaction in 3d virtual space
- Game concepts and technologies provide us a solution for working with complex “real” data and model visualization

Computer Games
Something to take seriously

GNNViz Demo