



World 2011

Animation Renderfarm

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Presentation Outline

- Introduction
- Hardware and software components
- Typical steps in a render job
- Renderjob Demo
- Technical details
- Future directions

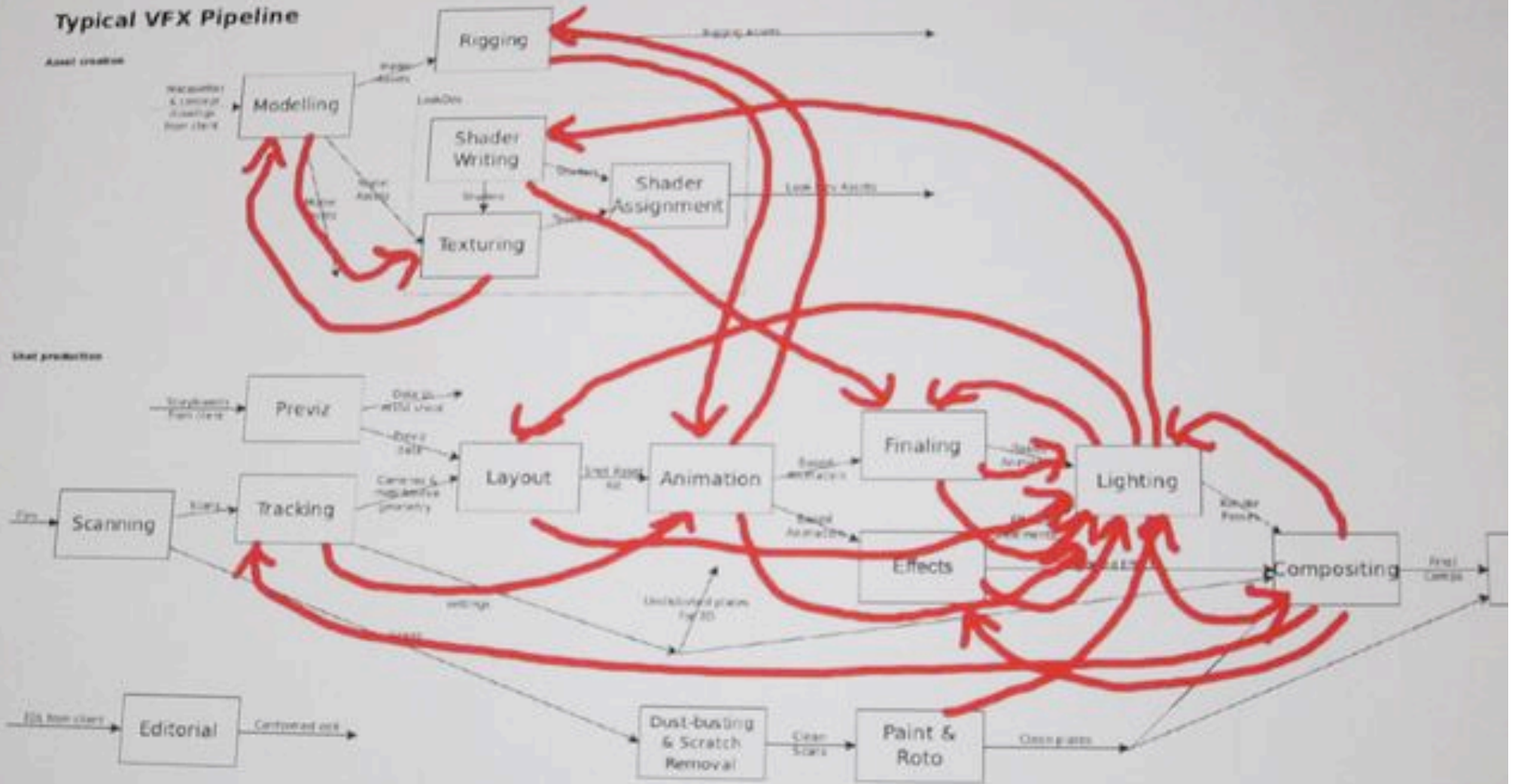
Animation Showreel

Why build a renderfarm ?

- Rendering animation is a processor intensive, time consuming job
- Students spend less time waiting for renders to finish
- Review work sooner -> make changes quicker or start new stuff
- Help prepare students for working in industry

3D Pipeline

Typical VFX Pipeline



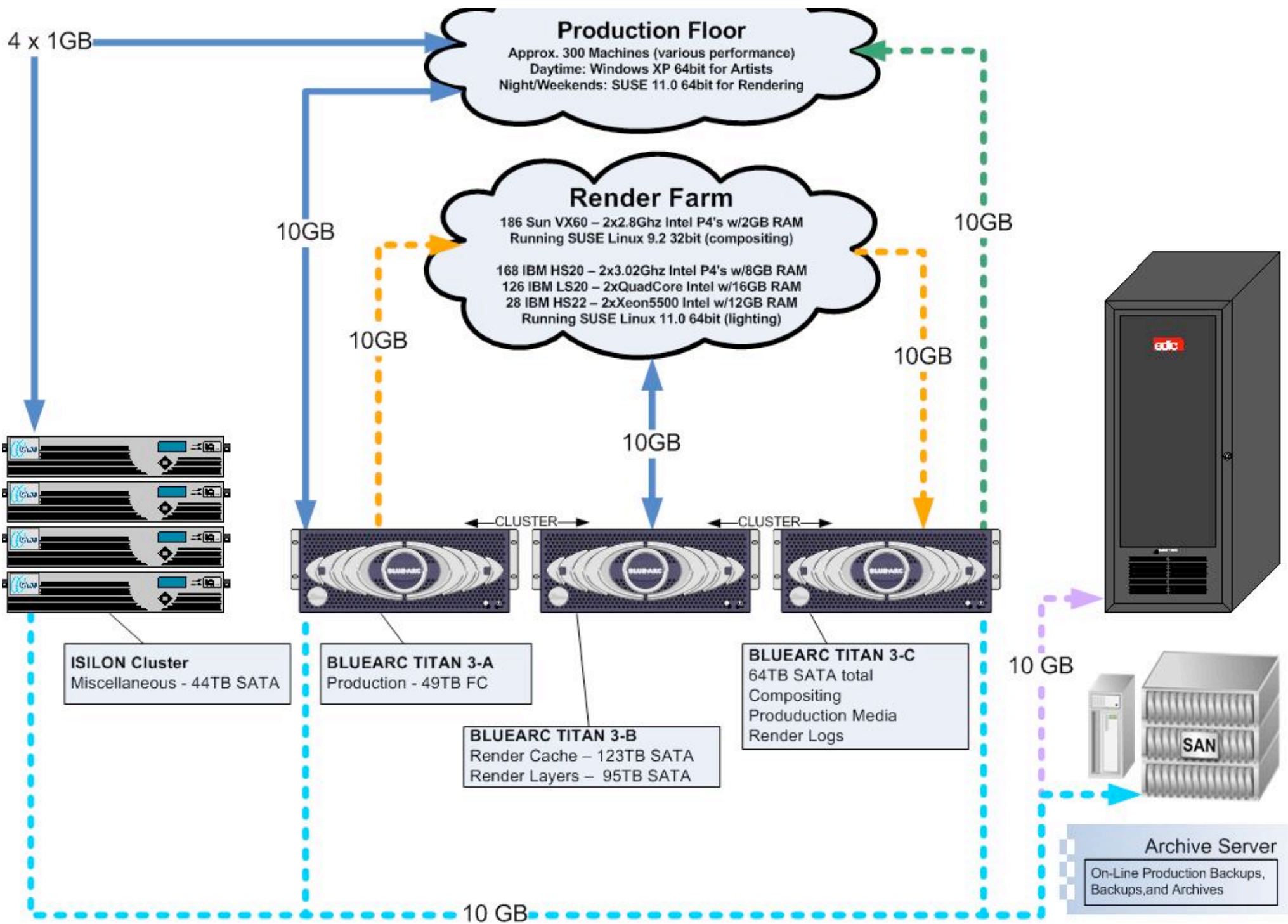
Hardware

THEN - 2006

- 46 PowerMac G5 Quad cores
2.5 GHz, 2 GB RAM
- 19 Xserve G5 cluster nodes
dual-processors
2.3 GHz, 2 GB RAM
- **total cores - 222**
- 1 G5 Xserve
- w XRaid attached
1.35 TB disk space

NOW - 2011

- 30 MacPro Intel 8 Cores
3.2 GHz, 26 GB RAM
- 3 dedicated render boxes
MacPro Intel 12 Cores
2.66 GHz, 24GB RAM
- **total cores - 276**
- 2 Intel Xserves
- Promise VTrak RAID
3 x 6TB volumes



Software

2 main pieces of software :

- Maya 2011 from Autodesk Inc.
- Rush Network Render Queue
from Seriss Corp/ Greg Ercolano

Others :

- Fcheck, Apple Remote Desktop, OS X
Server, OS X 10.6

Typical steps in a render job

- Students create animation scenes using Maya (1-2 minute short animation typically has multiple scenes/ camera shots)
- Copy project directory to Renderfarm volume. Project dir includes scene files, sourceimages, textures, and more.
- Submit job to Rush render queue

- Rush daemon on submit mac sends job to renderjob controller
- Renderjob controller distributes frames to available macs
- Rush daemon on each machine launches maya cmd line renderer
- Maya renders in the background
ie. while macs are sitting at login window

- Macs not available to render if student is logged in
- Rendered frames written back to renderfarm volume (incrementally)
- Students can monitor and manage job progress using irush application

Live Demonstration

Rush

- manages distributed rendering, compositing, and other command line capable software (eg. 3D Studio Max, After Effects, Softimage, Houdini, Renderman)
- can work on small or large networks of Linux, Mac, or Windows machine.
- we've tried cross platform rendering - mixed success

Rush cont ...

- Our experience with Rush -
 - great technical support over 5+ years
 - extensive documentation & FAQs
- Have not had any compelling reason to change
- Check out the website <http://seriss.com/rush/>

It's even won an Academy Award ! :

<http://www.oscars.org/press/pressreleases/2011/20110107.html>



Event: The Scientific & Technical Awards Presentation

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Size: 2,400w by 1,920h. 664,689 bytes **Date:** 02/12/2011

Greg Ercolano accepted a Technical Achievement Award during the Academy of Motion Picture Arts and Sciences' Scientific and Technical Achievement Awards on February 12, 2011, in Beverly Hills, California.

OS X modifications

- NFS Renderfarm volume to prevent file permissions issues
- StartupItems script to mount NFS volume
- Login & Logout Hooks take Rush offline & online
(no rendering while students logged in)

Live Demo cont

Alternative render systems

- Alternatives we looked at :
 - Qmaster
 - DrQueue - needs X11 and Fink
 - X Grid - not specialised enough
 - And others ...

The future ...

Renderfarm continues to evolve

- Other types of rendering - 3DS Max ?
- web interface to monitor and manage jobs
- digital architecture - increasing need for 3D rendering
- animation undergrad degree starting next year
- new student lab, more dedicated render boxes

Questions ?