Simulator Construction Without the Agonizing Pain

Medicine Meets Virtual Reality
Session C

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http://simcen.org/mmvr2009

Preamble

- Workshop CDs
- Workshop website
  http://simcen.org/mmvr2009
- Presentations and forum for discussion

Speakers

- Alan Liu
- Eric Acosta
- Jennifer Sieck
- Robert Waddington
- Daniel Evestedt

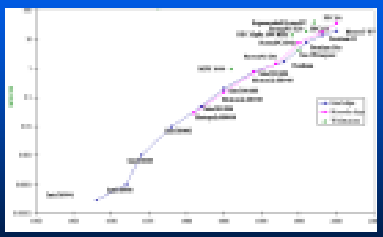
Motivation

Demand

- DoD medical simulation initiatives
  - – Air Force Medical Service
  - – Army
    - » Central Simulation Committee
    - » Medical Education and Training Campus
    - » Medical Simulation and Training Centers
  - – Navy
- American College of Surgeons
  - – Accredited Education Institutes

Technology

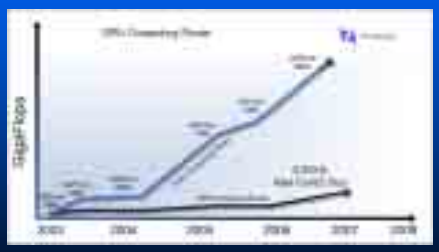
- CPU Performance



Source: Warren A. Kibbe, Ph.D., Northwestern University

Technology

- GPU performance



Source: Vision4CE

Technology

- Low cost 3D stereoscopic displays
- Haptic interface devices
- Immersive displays

What's Missing?

- Understanding how to apply technology effectively
  - How much technology is too much?

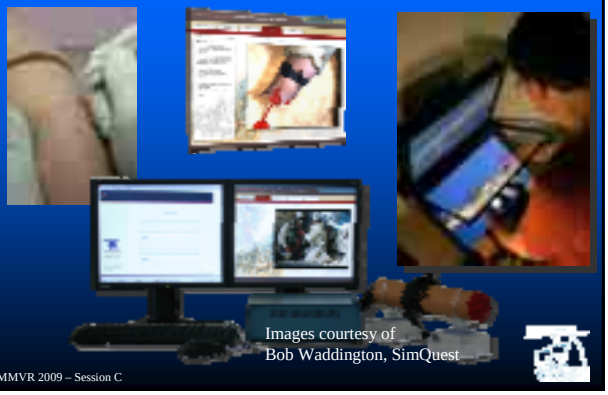
Workshop Goals

- Understanding the problem
- Development workflows
- An introduction to advanced techniques
- Case studies
- Provide resources for followup

Common Mistakes

- Technology is king
  - Newer/more complex technology must be better
- Build them and they will come
  - End-users must like our product

Educational Requirements Analysis



Images courtesy of
Bob Waddington, SimQuest

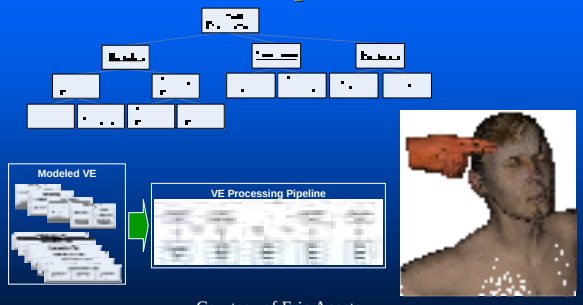
The 3D Model Development Workflow

Image courtesy of Jennifer Sieck, SimCen

The H3DAPI

- Haptic Workbench
  - Co-located stereoscopic image and haptics
- Display and haptic rendering techniques
- Case studies

Simulator Virtual Environment Development



Courtesy of Eric Acosta, SimCen

Schedule

- Introduction
- Educational Requirements Analysis
- The 3D Model Development Workflow – From Design to Deployment
- Break
- H3D API - An open source API for dexterous skills simulators
- Simulation Virtual Environment Development
- Open Discussion