

A photograph of a military helicopter, likely a UH-60 Black Hawk, hovering in the air. It is hoisting several soldiers by ropes. The background features a tall, modern skyscraper with a grid-like facade. The scene is set in an urban environment with other buildings and trees visible in the distance.

From Visual Simulation to Virtual Reality to Games

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Games

People want games for their next training simulator

- Why is there so much interest in games?
 - More intuitive interface
 - More immersion
 - Can use entertainment tricks to get a message across rather than worry about the real modeling of the displayed system.

Some people
dislike games ...

Games == Playing
for the older
generation

So if we build games, how much do they cost?

Costs	FY00	FY01	FY02	FY03
Game Engine	\$300K	\$100K	\$100K	\$400K
Dev Costs	\$2M	\$2.5M	\$2.5M	\$2.5M
Op Costs	\$1.5M	\$1.5M	\$1.5M	\$1.5M
Total	\$3.8M	\$4.1M	\$4.1M	\$4.4M

What is the real hard issue with building games?

Team Building

- One game
 - Team of 26
 - 4 programmers
 - 22 level designers & artists
 - Getting this team to function in a pipelined fashion
 - Familiar with the selected game engine & tool suite
 - MOCAP availability & integration
 - Resource management
 - Interdisciplinary, cross-cultural experience

Game Engine

If you license a commercial engine, you get to use it for one game.

- \$300K for Engine
 - \$100K/year maintenance
- Another \$300K for Engine-2
 - \$100K/year for maintenance
- Cannot send the source to anyone else!
- Stuck sucking this forever ...

Open Source Game Engine

Can be done

- DoD/DoN needs this like yesterday
 - So we can build many training simulations that look like games that can be supported over the long term in open fashion.
- Also needs to consider open sourcing the developed art content

The real cost of games for training



Well, building a training system is way less expensive than building a full-blown game!

- We probably only need one level.
- BUT what we would like is a PLACE we can go to to get this training level built.
 - Where there is a staffed team
 - Where there is a game engine that is usable for many different projects
 - Where there are reusable art resources & code

Is there such a place today?

No.

- DARWARS is not this.
- America's Army is not this.
- We really need to build a capability.
 - An open capability - none of these places is open today, really.

Where did we start?

NPSNET - 1990 - 1996

- Motivation was to make workstation-based virtual environments available to everyone.
 - We put it on the web & thought we were successful when we had over 100 downloads!
 - BUT we did simplify many peoples lives by doing this.
 - We made it so anyone with a \$60K workstation could play in DIS simulations or extend NPSNET to their own purposes.
 - So how do we get back to this for games?

Why the game path?

Games are mainstream entertainment.

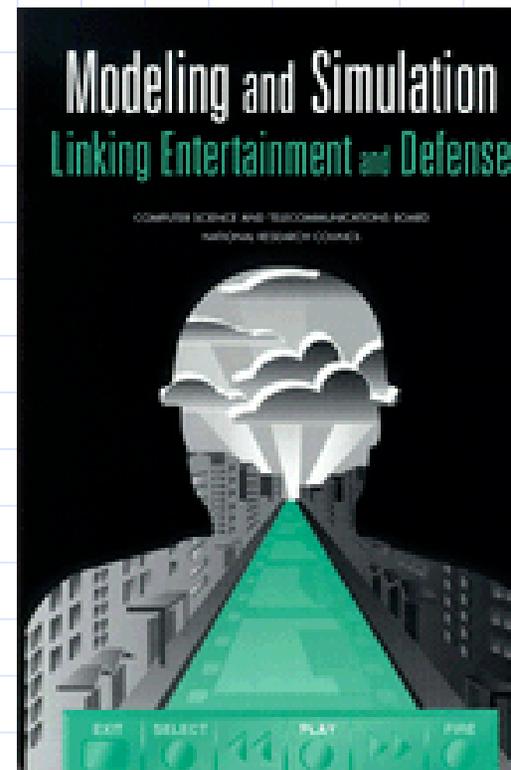
- They look way better than the old style virtual worlds & visual simulation systems we used to build.
- We use the creativity of artists & designers rather than the engineering acumen of engineers to get our training simulators built.

Why did we start thinking about games?

Entertainment as the main technology driver

The NRC report states that games and interactive entertainment (IE)—and not defense research expenditures—have become the main technology drivers for networked virtual environments.

To keep up with evolving modeling, virtual environment, and simulation technologies, it is important, according to the report, that DoD examine networked entertainment to ascertain the potential for joint investment or collaboration.



We thought a lot about this when
we formed the MOVES Institute

Mission

Research, application and education in the grand challenges of modeling, virtual environments and simulation.

- Web-Based Simulation
- Computer-Generated Autonomy
- Human Performance Engineering & Game-Based Simulation
- Combat Modeling & Analysis

And there is now a tsunami of
interest in game development

Interesting Conferences are Springing Up ...



The Serious Games Workshop

The Education Arcade

ACM Advances in Computer Entertainment

ACM Symposium on Interactive 3D Graphics &
Games

USC Games Summit

Schools are building programs ...



USC

- Information Technology Program Minors
 - Minor in 3D Animation
 - Minor in Video Game Design & Management
 - Minor in video Game Programming
- School Of Cinema & Film
 - MFA in Interactive Media
- Viterbi School of Engineering
 - GamePipe Initiative
- Institute for Creative Technologies

Schools & Other Interesting Places



CMU ETC

NPS MOVES

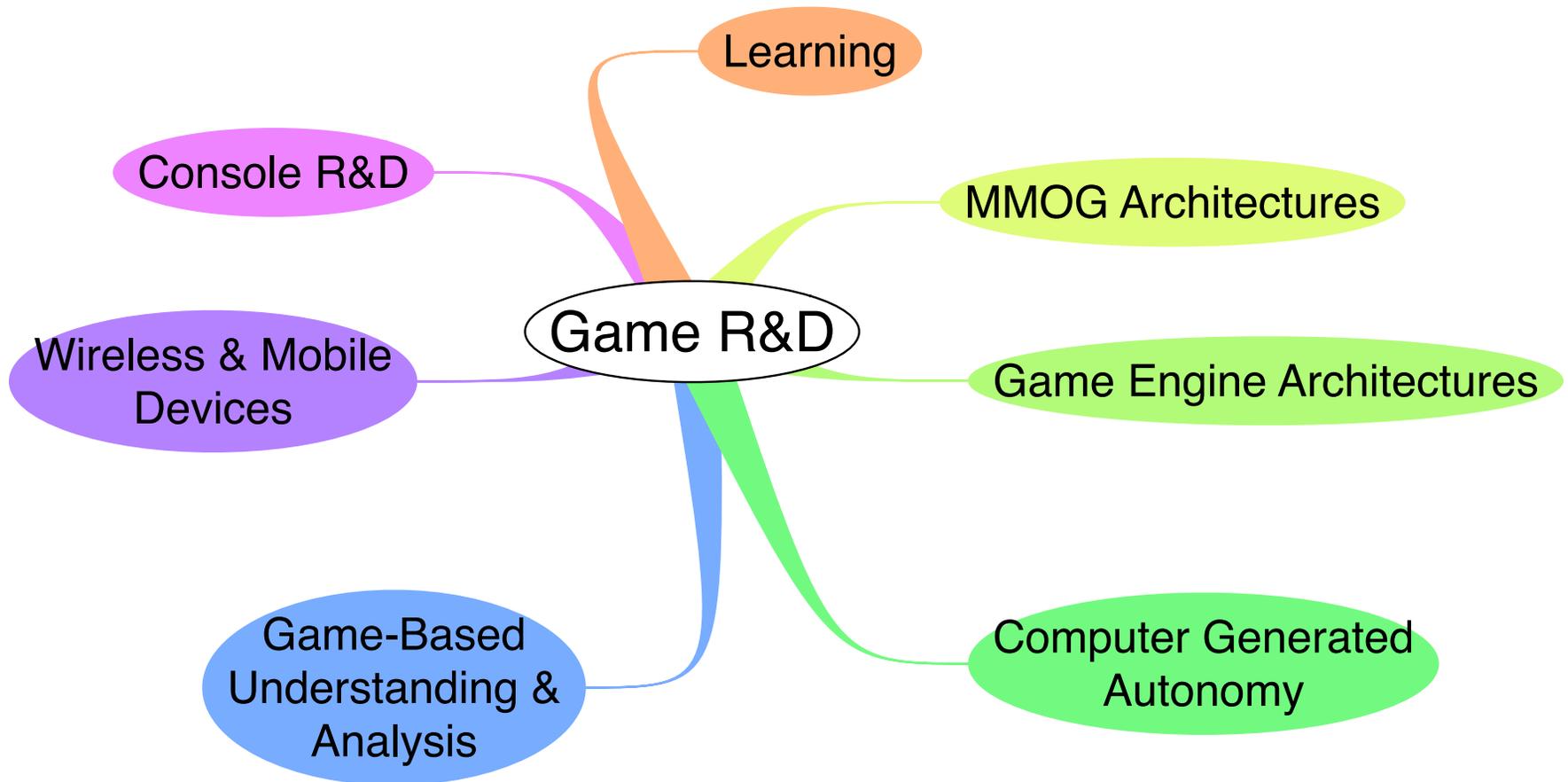
- CSUMB

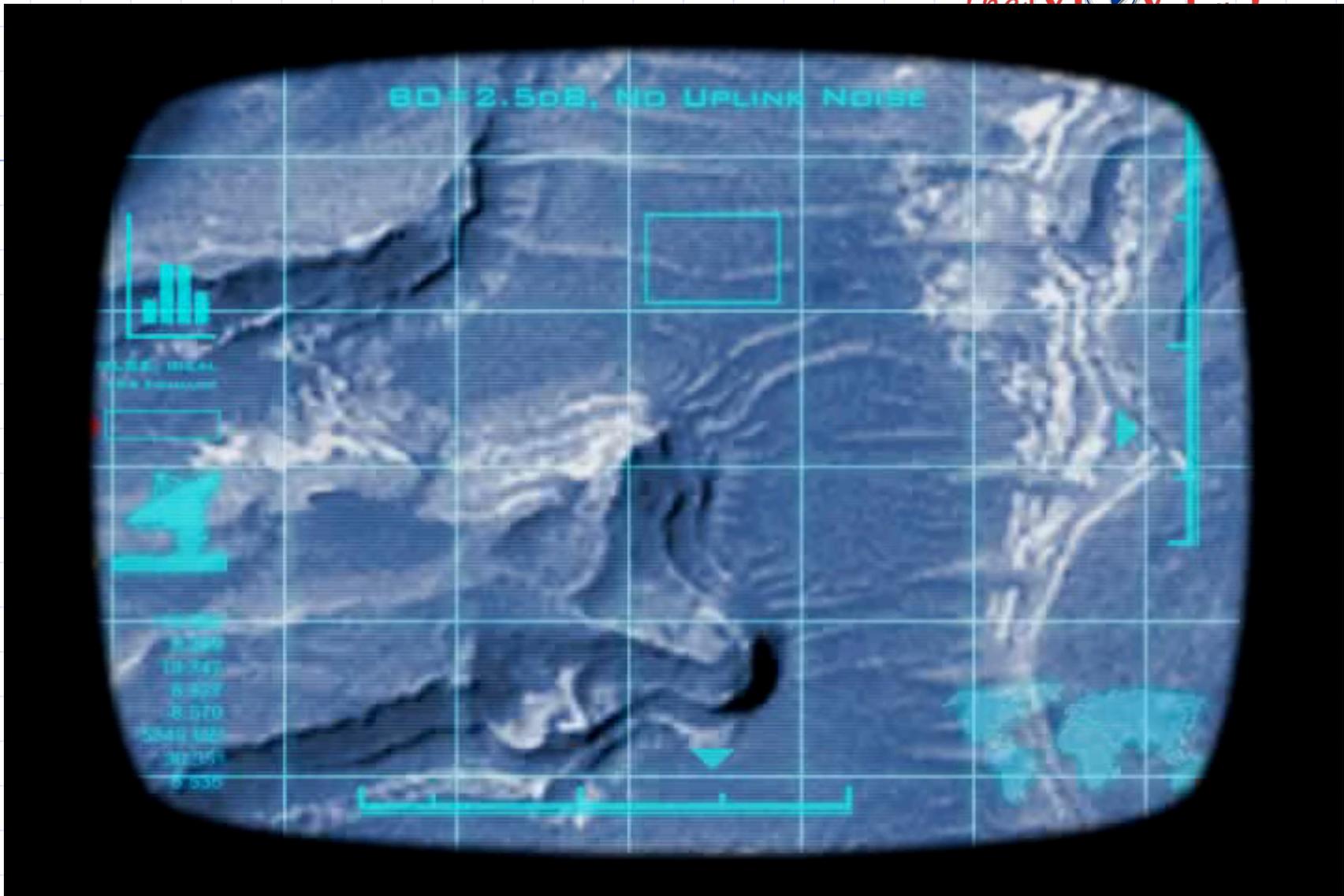
Are/Will be many others ...

Grand Vision

We build a place/consortium that builds games, VG trainers & game technology fully in the open ...

- Ideally, we would like this as open as the world wide web.
- With an affiliated degree program/s





Questions?



Web site for additional information:
<http://movesinstitute.org>