“Game Tech in Navy Training”

NAVAL AIR WARFARE CENTER
TRAINING SYSTEMS DIVISION
ORLANDO FLORIDA

Curtis Conkey
NAWC-TSD / JTIEC

Joint Training Integration and Evaluation Center

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Overview – Navy Deployment Grass Roots Efforts

- CBT – Primarily developed product; some COTS
  - Aviation – 24Blue (prototype)
  - Surface – Dangerous Waters, Kill Chain
  - Submarine –SubSkillsNet, VISIT, BottomGun
  - Medical – PTSD, Pulse
- Distance Learning – NAVY ILE
  - Scattered efforts with Flash based projects
    - No 3D efforts
- Recruiting
  - Downloadable 3D game developed

Mainstream Cont

- Leadership Game – NETC/HPC/CNL w/ Cal State
  - Focus on Individual Critical Thinking Skills
  - Based on Half-Life2 and Machinima
- CyberCIEGE – NPS/NETC/ONR
  - Interactive SIMS-like environment for computer security education & training
    - Information Assurance
    - Network Management
    - Network Defense

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Mainstream Cont

- Microsoft Flight Simulator – CNATRA
  - Flight Training
  - Incorporated into MRT3 – anti-sub training
- 24 Blue – NETC/CNAP
  - Flight deck simulation demo

Image from 24 Blue

VR Therapy PTSD

- Virtual Vietnam
- World Trade Center
- Terrorist Bus Bombing
- Motor Vehicle Accidents
- Virtual Angola
- Virtual Iraq

Possible tool for diagnosis & prevention as well as treatment

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Mainstream Games

- Dangerous Waters – USNA
  - Augmenting classroom instruction
- Kill Chain – NAVSEA
  - Using AI to rapidly simulate conflict scenarios

Image from Dangerous Waters

Image from Kill Chain

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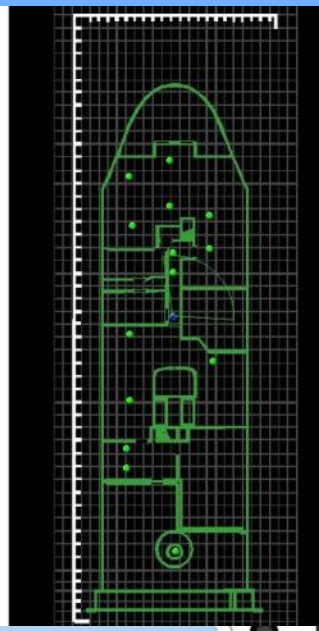
Mainstream Cont

- VISIT – NAVAIR TSD
  - Blending 360 degree photography w/ gaming ideals for situational awareness training
- Bottom Gun – NAVAIR TSD
  - Early use of gaming as a training application



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Directions

SOME AREAS OF INTEREST

Empirical Data and ROI

- Several Meta-studies of Gaming effects show a positive results
- Some Empirical Studies under way
- ROI still a big hole!

Game-based Training

Empirical Evidence, ROI, Where to Use?

Two Phase II projects.

Figure 16. FMS Main Game interface.

Flight Management System

Combat Operations Center

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Learning Managed Systems and Game-based Training

- Stand alone GBT isn’t going to cut it in the long run
- Have to integrate into LMS managed environments
- Tracking of Learning Objectives in the GBT environment

LMS - 3d Simulation Integration

Phase I work – 2005-2006

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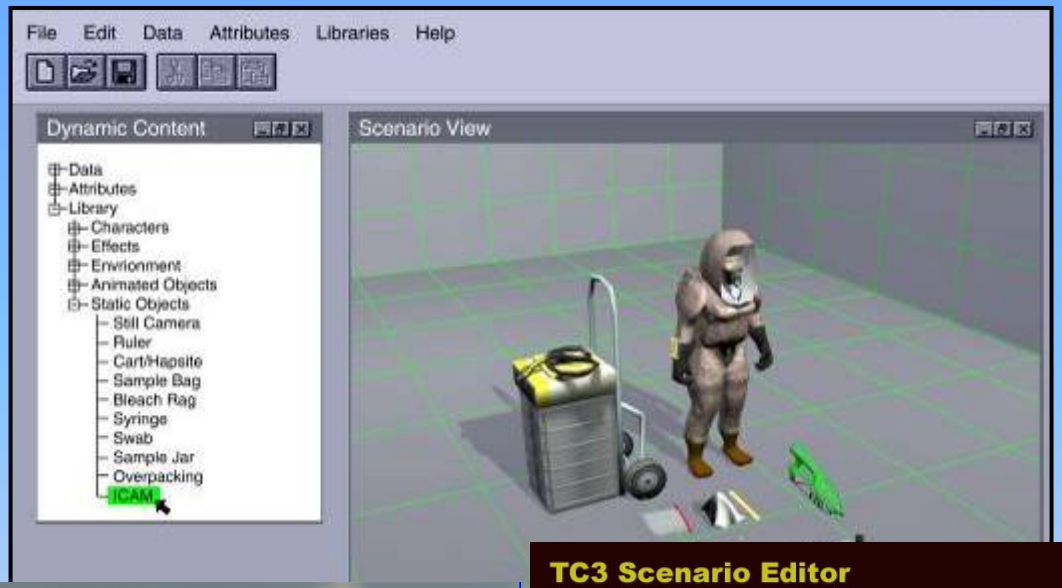
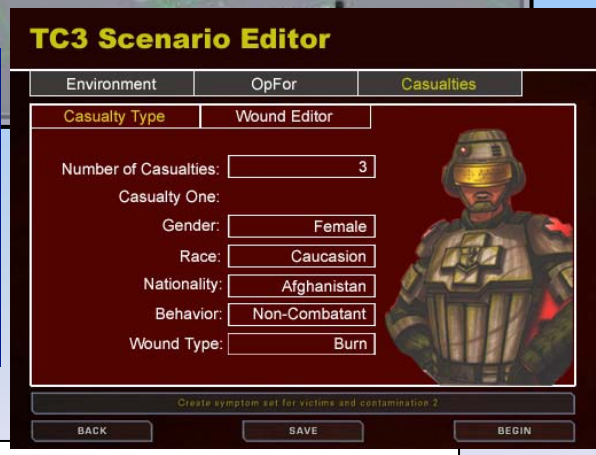
Simulations for Integrated Learning Environments

Phase II work – 2007-2008

Assessment Authoring Tool

- Feedback, remediation, AAR
- Import and edit Training Objectives and assessment
- Save dynamic assessment models for reuse
- Package and deploy games/sims on demand
- Leverage LMS-SIM to communicate performance
- Engine agnostic - expand to interoperate with other applications





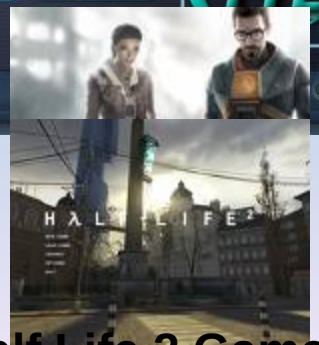
An assessment authoring toolset will provide a standards-based interface to create and modify assessment parameters inside scenario-based training simulations. The modular approach taken to develop these tools will allow it to be used with applications built using different engines.

Web-based Environments

- Services standardizing computers / networks
  - Often geared to office requirements
    - Performance, graphics, bandwidth, server sizing
  - No requirements for advanced training platforms
- Push towards Wed-based delivery
  - Avoid software distribution, hardware upgrades
  - How to get game-based training into here?
    - Not all games are 3D
    - Need to get diversity of approved plug-ins

Not all games need to be played

- Other means to use gaming technology
- Create high-reality multi-media training
- Gaming Mods and Machinima



Half Life 2 Game

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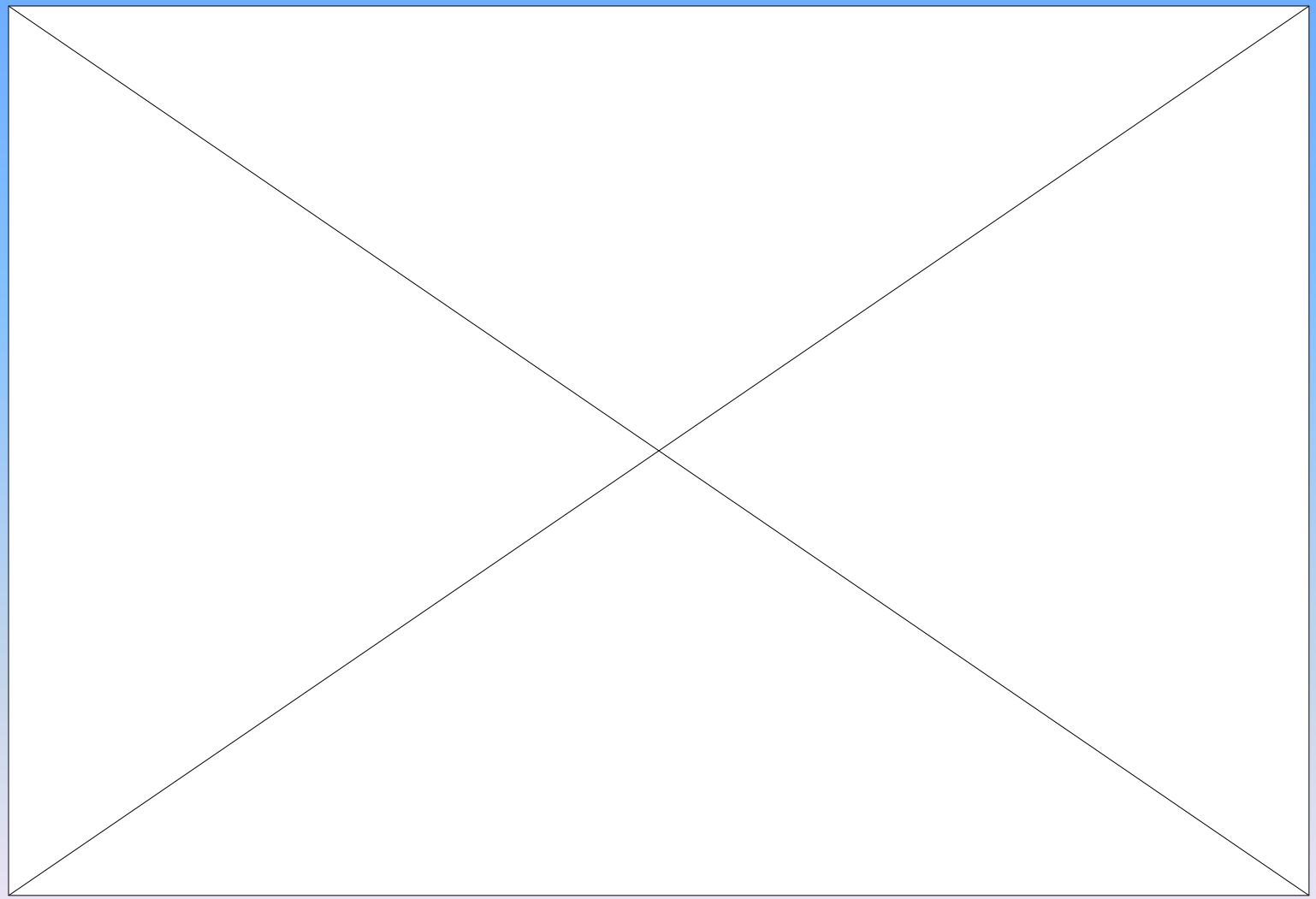
Video



Virtual Worlds

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VW Interconnectivity

- Traditional Networked Simulations agree on virtual environment beforehand
- They coordinate events between networked simulation engines at a peer to peer level
- How does this work in the client / server orientation of Virtual Worlds?
- What if the VW I want to interoperate with isn't a clone of my system – i.e. unique characteristics
- What if we are not just coordinating events but need to send objects
- Virtual Worlds Conference 2008
  - Products aimed at common Avatars across VW's

Navy VW Video

Conkey-TLAM_0001.wmv

Games vs Virtual Worlds

Virtual Worlds

- 24/7
- Persistence of state (case studies)
- Moderate Fidelity
  - Physics model
  - Network model – lag, jitter
- Large teams
- Client/SERVER (backoffice)
- Internet
- Security issues
- Remote Presence
- Remote communications

Networked Games

- As needed
- Clean slate on start
- High Fidelity
  - Physics model
  - Network model – lag, jitter
- Small teams
- Client/Server (laptops)
- Local net
- Isolated
- Physical Presence(travel)
- Direct communications

Future

- VW's as Information Mixing Platform
  - Live info feeds to Virtual War Room
  - Verbal, Text and Visual inputs (Haptics???)
  - Dynamic blending, molding and manipulation of information
  - Case study repositories – models and simulations

Challenges

- Technology – security collision
  - Hobbling of innovation due to security concerns
    - i.e. I want a 3d interactive multiplayer game running in a browser…. Oh did I mention.. you can only use Flash.
- Development Costs
  - Simulations/Games cost significant investment
- Risk Aversion
  - Looks great but don’t try it on my training????

Navy Virtual World

April 25, 2008

Curtis Conkey

NAVAL AIR WARFARE CENTER
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Project Overview

- **Customer:** **JTIEC / NAWCTSD**
- **Purpose:** **Phase I** Construct a virtual world "tuned" to US Navy concerns, applications and environments
  Phase II Establish second VW platform to investigate interoperability between unique VW instances (i.e. can I send a missile from Navy VW to Army VW)
- **Timeframe:** May 2007 – April 2008
- **End Product:** Prototype application that simulates the use of Cruise & SCUD missiles in support of Naval warfare, in a scenario set in the Persian Gulf
- **Customer POC:** Curtis Conkey, JTIEC / NAWCTSD

Navy Assets Created

- Created Navy assets within Forterra's OLIVE (On-Line Interactive Virtual Environment)
  - Persian Gulf harbor & harbor town
  - DDG 51 exterior and interior (Bridge & CIC)
  - Cruise (TLAM) missile
  - SCUD missile & launcher
  - Navy clothing for avatars (coveralls & general quarters battle gear)
  - Custom Communications equipment - Point to Point RED phones.

Navy Scenario

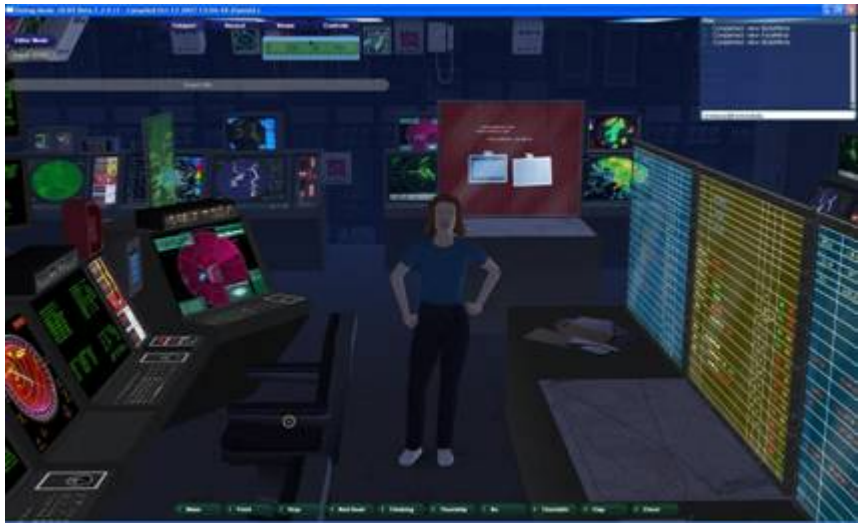
- Authored a scenario to demonstrate the capabilities of Navy assets
  - SCUD launches into harbor
    - Hits & damages buildings
  - Navy issues general quarters alarm
    - Avatars automatically changed into general quarters battle gear
  - Navy responds by issuing TLAM launch
    - Complete (unclassified) re-creation of launch sequence
    - Includes activities & communications on deck, bridge, and CIC
  - TLAM launches from DDG 51 and hits SCUD launcher

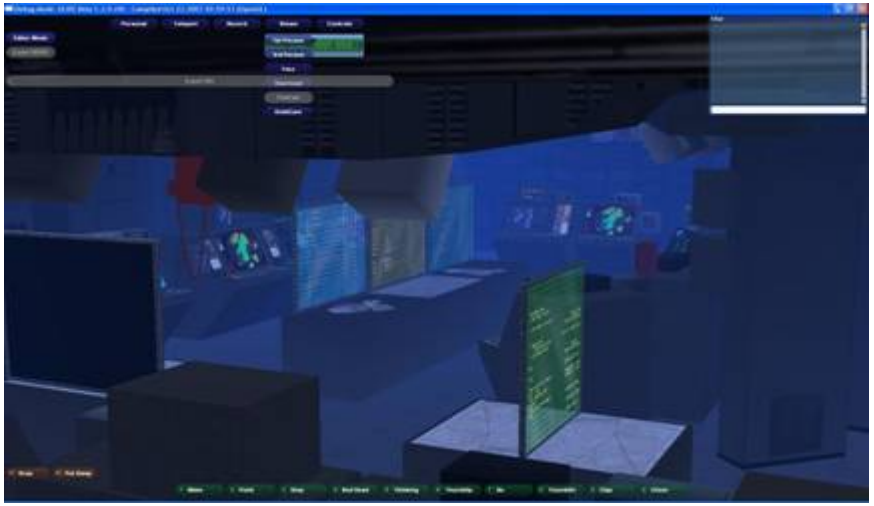
Navy Scenario

DDG 51 Exterior

Bridge

CIC





Missiles

Video

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Challenges

- Network Security
  - Even within the DoD often difficult to network between labs
  - Never mind trying to connect outside
  - Site by site interpretation of rules
- Services standardizing computers / networks
  - Often geared to office requirements
    - Performance, graphics, bandwidth, server sizing
  - No infrastructure requirements for advanced training platforms
- Web based – thin client solutions
  - Heavy clients discouraged
  - Very difficult to get new web plug-ins
  - Downloaded executables require certification case-by-case

Future

- VW's as Information Mixing Platform
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