



Panel: Technology for Game Developers

Moderator: Roger Smith, US Army PEO STRI
Tom Carbone, UCF Florida Interactive Entertainment Academy
Shawn Stafford, Full Sail Research
Tim Holt, Oregon State University



Approved for Public Release.
Security and OPSEC Review Completed: No Issues.

AFCEA Defense GameTech Conference
29-30 April 2008, Orlando, FL

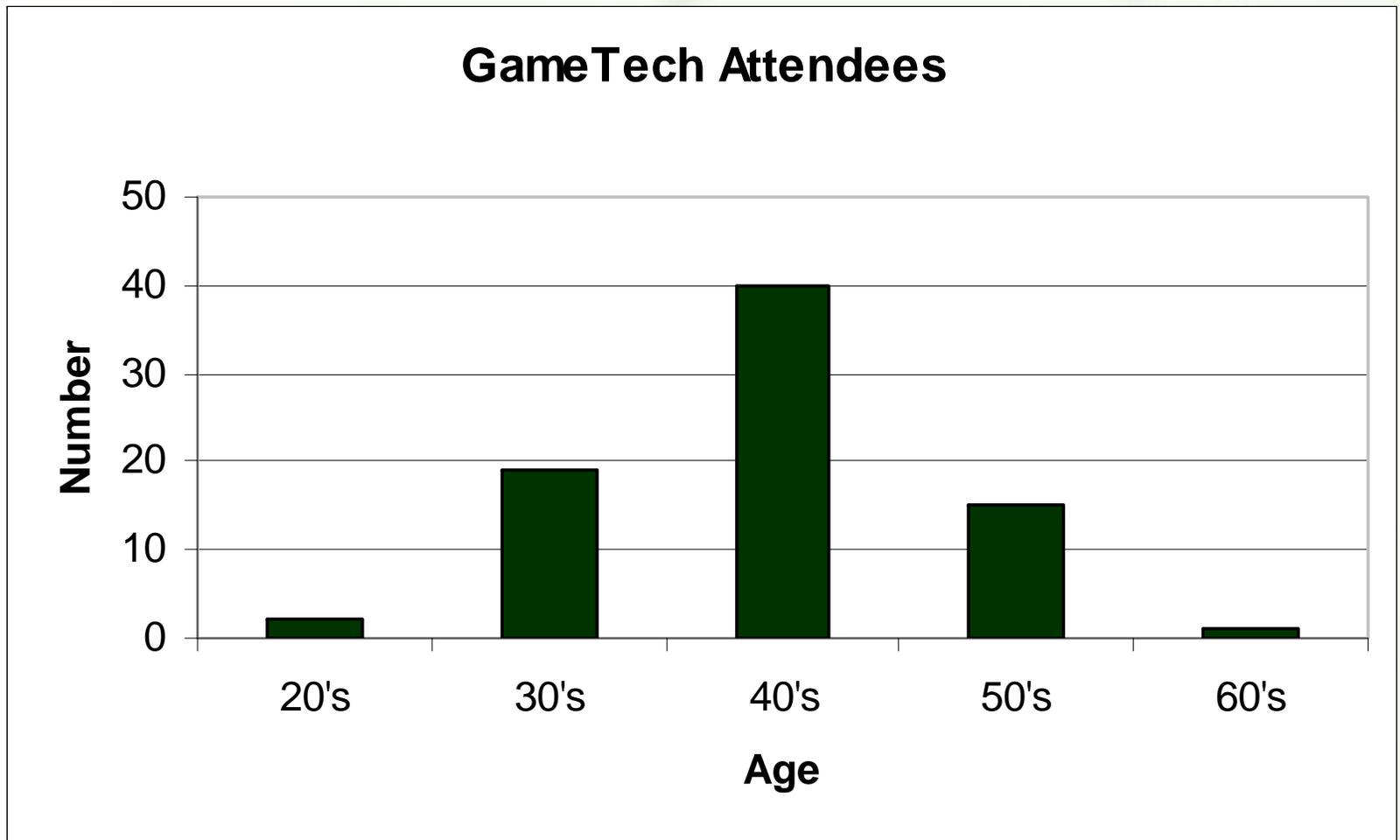


- **Moderator: Roger Smith, CTO**
 - ❖ US Army PEO-STRI
- **Tom Carbone, Technical Director**
 - ❖ UCF Florida Interactive Entertainment Academy
- **Shawn Stafford, Director of Research**
 - ❖ Full Sail Research Institute
- **Tim Holt, Researcher**
 - ❖ Oregon State University



How Old Are We?*

Average Age in Audience = 44



*Based on head count and visual estimation of ages by the author



Military Serious Games



DARWARS Iraqi Lang Trainer



IEWTPT Tactical Questioning



AMBUSH!



Americas Army



Full Spectrum Warrior



Industries Adopting Game Tech



Military



Medicine



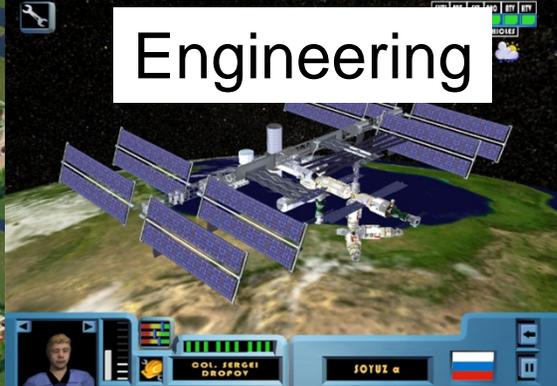
Emergency Mgt



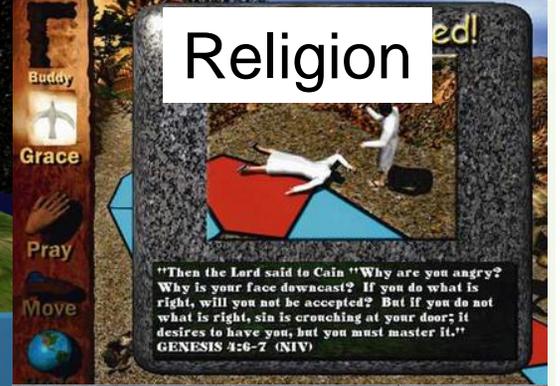
City Plan



Engineering



Religion



Space Explore



Machinima



Politics





Entertainment Market is Driving Tech

- What are the essential technologies that game developers must master?
- How are these being provided by educational institutions?
- What other initiatives is your organization pursuing?
- Q&A





Tom Carbone, UCF FIEA



Creating Rockstars

Making Tomorrow's Game Developers



Florida Interactive Entertainment Academy

active enter. Learning.

Personal Background

- 16 year Game Industry Veteran 
 - Started career at Hughes Aircraft working on AMRAAM missile radar software
 - Transitioned to making sports games on the Sega Genesis in 1992
 - Lead programmer on Madden 2005 and 2006
 - In charge of instruction of programmers at FIEA, in addition to being curriculum director
 - UCF Modeling and Simulation PhD Candidate



Video Games v Simulations

Flawed View

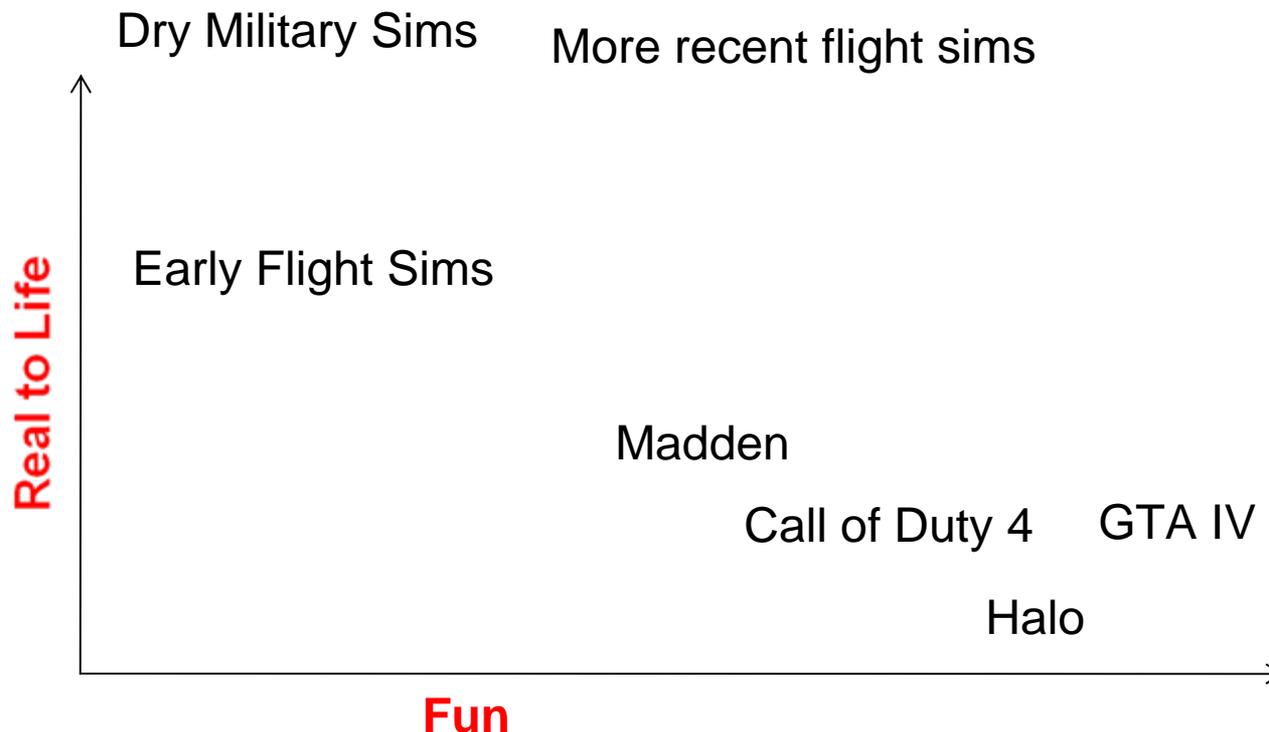
- Recently finished up research grant with a defense contractor hoping to use game technology to make simulations
- Misconception is Games vs. Simulation
 - “Real-Life” vs. “Fun”
 - “Accurate” vs. “Entertaining”



Games v Simulations

A Better way to think about it

- You don't have to be "not entertaining" to be an accurate simulation



Feature List

Simulation or Game?

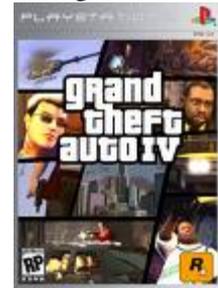
- Streaming Detailed, Richly populated game worlds to explore and learn in
- Detailed User Interfaces
- Accurate Physics engine
- Convincing animation/Motion Captured characters
- Engaging characters and missions
- Accurate Vehicle Simulations

Game Technology

For Simulations

- Largest Video Game Launch in history today!

- Future players of your simulations are at home playing GTA IV today
- Technology used in making this game is the same sorts of technology found in the simulations you could be making today
- Separate in your mind the CONTENT of the game from the technology used to make it



Common Technology

Games and Simulations

- Streaming Detailed, Richly populated game worlds to explore and learn in
- Detailed User Interfaces
- Accurate Physics engine
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UCF/FIEA

- FIEA
 - Florida Interactive Entertainment Academy
 - Graduate School at UCF specializing in creating video game developers
 - › All students have a Bachelor's Degree
 - Programmers
 - » Computer Science or similar backgrounds
 - Artists
 - » Fine Arts, Computer Animation backgrounds
 - Producers
 - » Various backgrounds



Core FIEA Philosophy

- No replacement for experience actually making real games
 - Faculty from industry
 - Curriculum heavily focused on interdisciplinary team game development
 - Facility and equipment modeled after game industry
 - Game development hardware provided 
 - Motion capture facility to integrate with game development



Microsoft

FIEA Experience

- 16 months to turn
 - Programmer into a Game Programmer
 - Artist into a Game Artist
 - Producer into a Game Producer
- Working in groups from beginning to end

FIEA Programming Track

- Game programming is notoriously difficult
 - What makes it so?
 - Loose specs – “Make it fun”
 - Pushing the hardware to the limit
 - Often working with limited system specs means programmers need to infer and use trial and error and experience to figure out how systems work
 - Nature of quick iterations on game means development frameworks need to be very abstract and easily modifiable, data driven



Hiring game programmers

- What qualities do great game programmers share that you should look for when hiring game programmers?
 - Strong software engineering fundamentals
 - Top problem solving skills because every game has different needs, problems
 - Experience with large codebases, game middleware (as opposed to specific engines)
 - Experience working with artists and producers

Where to find them

- Existing game companies advertise job listings at <http://www.gamasutra.com>
- Top-notch undergraduate
 - Michigan, Georgia Tech, MIT, Stanford, CMU
- Graduate Schools add a dose of maturity and team skills and build on fundamentals
 - FIEA, Guildhall (SMU)
- Serious Games specific programs
 - Michigan State, USC

Building game teams

- Great engines don't mean great games
- Takes other types as well
 - Producers make the game experience engaging
 - Artists make the game look great
 - GLARING weakness in serious games to date
 - Experienced with tools of the trade
 - Maya, Z-Brush, Photoshop, Mudbox
- Organization needs to value and support creativity



Shawn Stafford, Full Sail Research



Full Sail University

Game Development Program

Full Sail Campus:

178 acres

715,000 square feet

6300 Students

100+studios

50+classrooms



Campus Highlights:

World Class Recording Studios, HD Editing Lab, Motion Capture Studio, HD Broadcast Studio, Film and Digital Production Soundstages, Live Venue and Performance Hall, Mac and HP Labs, Multimedia Audio Lab, Art Studios, Final Cut Pro Labs, Avid DS Nitris Labs, Digidesign ProTools Labs, Virtual Set, Mix Palace Music and Postproduction Suites, Virtual Programming Lighting

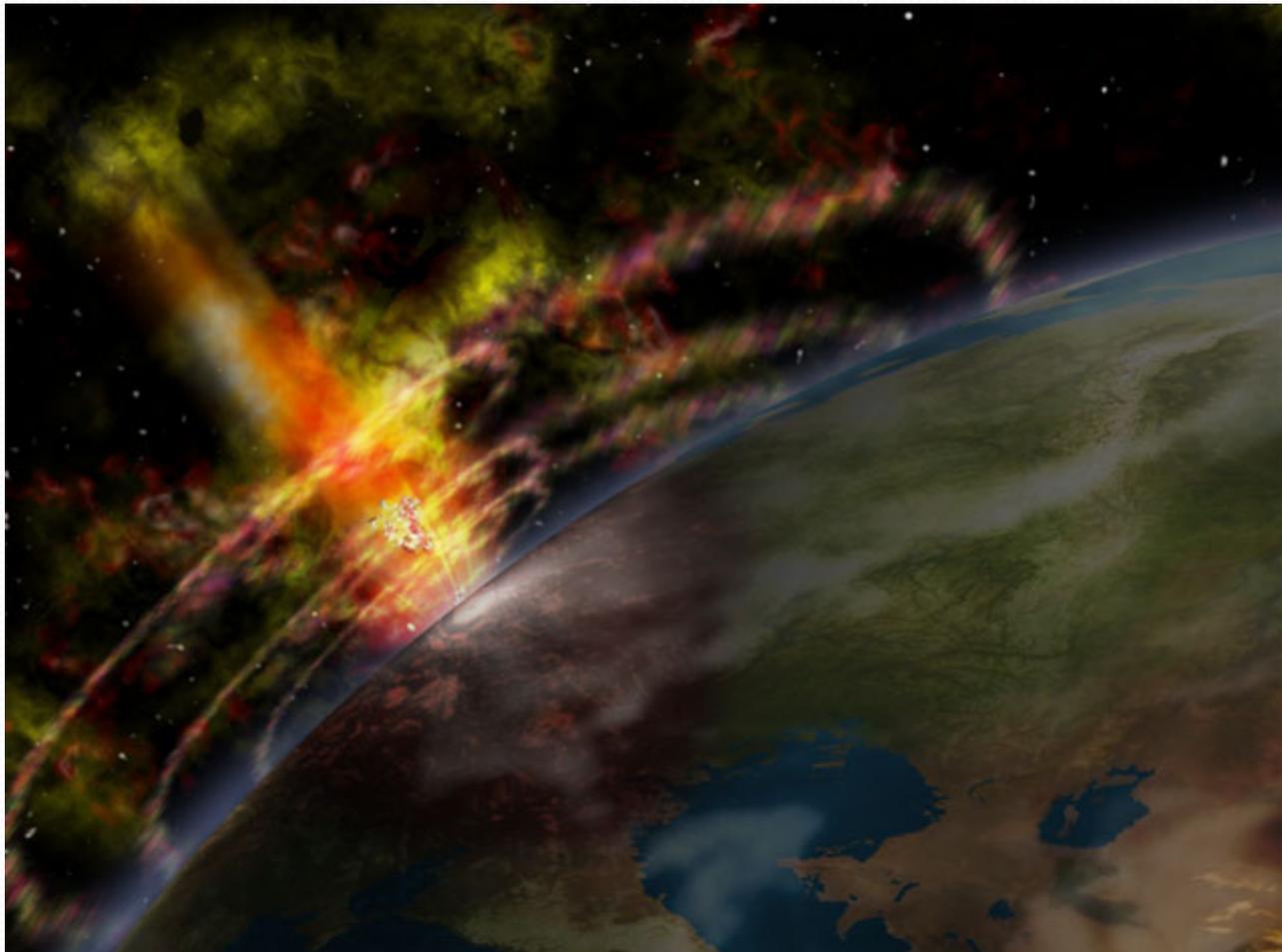
Directing the Game Development Program

- Advisory Board
 - Industry Professionals
 - Bioware-Austin
 - Disney-Salt Lake City
 - BigHuge Games
 - Sony
 - Turner Networks / Cartoon Network
- Software Engineering and Computer Science Structure

Environment

- Immersion in Game Development
 - 40 – 50 hour work week
 - Understand overtime
 - Project Oriented
- GOAL:
 - Contribute on day 1 to teams

Programming, Design & Usability



Traditional vs. Game Focused

- 3rd Party API
 - Unreal Engine
 - Open GL
 - Direct X
- Multiple Team Projects
 - Complete Games
 - Communication, Teamwork, Leadership
 - Milestones, Scheduling, Deadlines

GAME ART

- Design Principles



Design

- Code Design
- Project Design
- Feature Design
 - Tasking toward specific game play interactivity
 - Core Functionality



Core Functionality

- 30 seconds of fun
- Building around the “Main game play component”.
- “Prior Art Review”



Proximity & Perception



USABILITY 101

- Your best guess is not good enough
- The User is Always Right
- The User is Not Always Right
- Users are not designers
- Designers are not users
- Vice Presidents are not users
- Less is more
- Details Matter
- Help doesn't
- Usability is a process

WITLINGS = 4/5
SAVED = 0/1

MENU



TESTING METHODS

- Test of Methods
- Thinking Aloud
- Observation
- Questions and Interviews
- Focus Groups
- Logging Actual Use
- User Feedback
- Play Testing

Research at Full Sail University

- School Wide Projects
 - Computer Animation
 - Digital Arts & Design
 - Film
 - Game Art
 - Game Development
 - Graphic Design
 - Recording Arts
 - Show Production
 - Web Design & Development

Shawn Stafford

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Tim Holt, Oregon State University



Questions?

