Convergence of Military Simulation and Computer Game Technologies

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“A nation which depends upon others for its new basic scientific knowledge will be slow in its industrial progress and weak in its competitive position in world trade.”

Vannevar Bush

*Science, The Endless Frontier*, 1944
"The reasonable man adapts himself to the world; the unreasonable one persists in trying to adapt the world to himself. Therefore all progress depends on the unreasonable man."

- *Man and Superman*, 1903, George Bernard Shaw

"Where there is no vision the people perish."

- Proverbs 29:18, 3rd Century BC, King Solomon
Computer “Killer Apps”

Spreadsheet

Word Processor

E-Mail

3D Game Engine

Web Browser
Leveraging Game Technologies

- Game Technology = 21st Century Computer Technology
  - Games are no longer “toys”.
  - DOD application of games needs to step beyond modifying a product from Best Buy.
  - Extract key game technologies and use those to create military specific systems
- The real value is in the new customers that we can serve.
Christensen’s Disruptive Innovation

Performance demanded at the **high** end of the market

Performance demanded at the **low** end of the market

Progress due to sustaining technologies

Progress due to disruptive technologies

Market disruption opportunity

Progress = Waves of Disruption

Multi-Technology Disruption

Disruptive Game Technologies

- 3D Engine
- Persistence
- Physics
- AI
- Networking
- GUI

Product Performance

Time

Normalized Sustaining Technologies
Traditional Techniques (pre-game)
Game technology disruption of industry (post-game)
5 Forces for Game Adoption

Industry Success
- Success of the technology in other industries
  - e.g. Military Training, Chemistry Experiments, Corporate Training, Architecture Design

Adoption Pattern
- Niche Area
- Unregulated Spaces
- Certified Applications
- Recommended Practice
- Mandatory Standard

Social Acceptance
- Growing social acceptance of game-rooted solutions to serious applications and industries
  - Driven by Maturing Gamers, Social Prevalence, Media Image

Software Power
- Significant power of game-based software applications and tools
  - e.g. Intelligent Agents, 3D Worlds, Accessible GUI, Physics Models, Global Network, Persistent Worlds

Hardware Costs
- Significant reduction in computer hardware costs required to support game-based applications
  - e.g. 10X Reduction for PCs
  - 100X for Consoles

Experimentation
- In-industry experimentation with the technology identifies areas for useful application

Smith, R. (2007). “Game impact theory: Five forces that are driving the adoption of game technologies within multiple established industries”. Games and Society.
Wave of Change is Building

IT Services

Game Tech

Military

M&S

Computer Performance

Interoperability