



Effective Serious Games

Roger Smith
US Army PEO-STRI
roger.smith14@us.army.mil

Matt Spruill
SAIC
matthias.a.spruill@saic.com



Outline

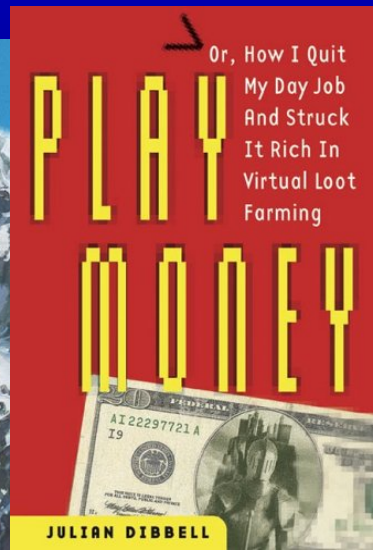
- **Serious Games Definitions**
- **Active Domains**
- **Effectiveness of Medium**
- **Future Directions**
- **SG Events**

Why are games important?

“Play is to the 21st century what steam was to the 19th century” - Power that can be harnessed for social and economic benefits.



Dibbell, J. (2006). *Play Money*. Basic Books

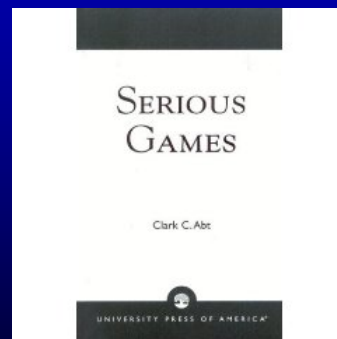


1970 Serious Games Definition

“Reduced to its formal essence, a game is an activity among two or more independent decision-makers seeking to achieve their objectives in some limiting context. A more conventional definition would say that a game is a context with rules among adversaries trying to win objectives.

“We are concerned with serious games in the sense that these games have an explicit and carefully thought-out educational purpose and are not intended to be played primarily for amusement.”

Abt, C. (1970). *Serious Games*. New York: The Viking Press.



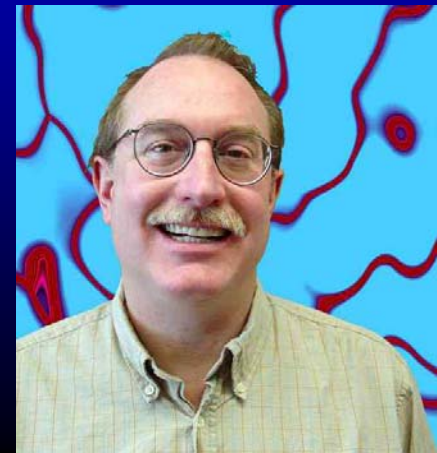
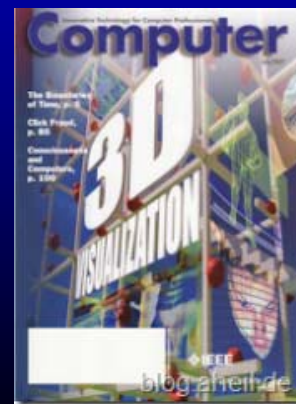
2005 Serious Games Definition

Game: “a physical or mental contest, played according to specific rules, with the goal of amusing or rewarding the participant.”

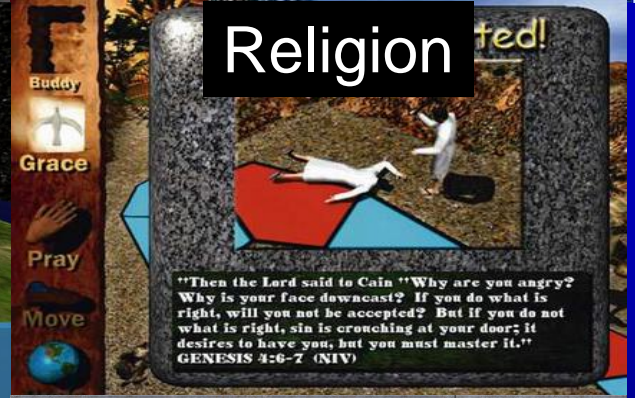
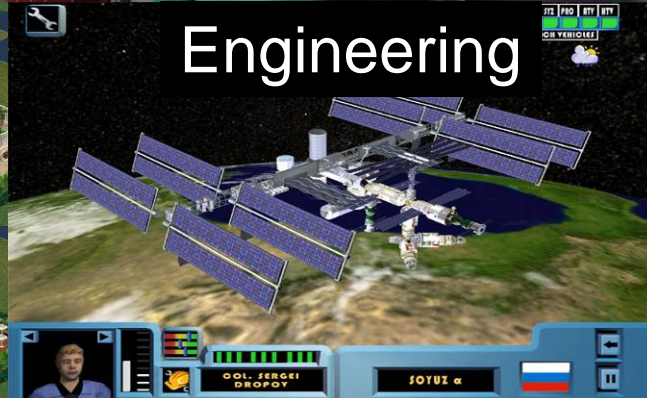
Video Game: “a mental contest, played with a computer according to certain rules for amusement, recreation, or winning a stake.”

Serious Game: “a mental contest, played with a computer in accordance with specific rules that uses entertainment to further government or corporate training, education, health, public policy, and strategic communication objectives.”

Zyda, M. (September 2005). “From visual simulation to virtual reality to games”. *IEEE Computer*.



Industries Adopting Game Tech



Military Serious Games

Iraqi Lang Trainer



AMBUSH!



VBS2



Americas Army



Full Spectrum Warrior



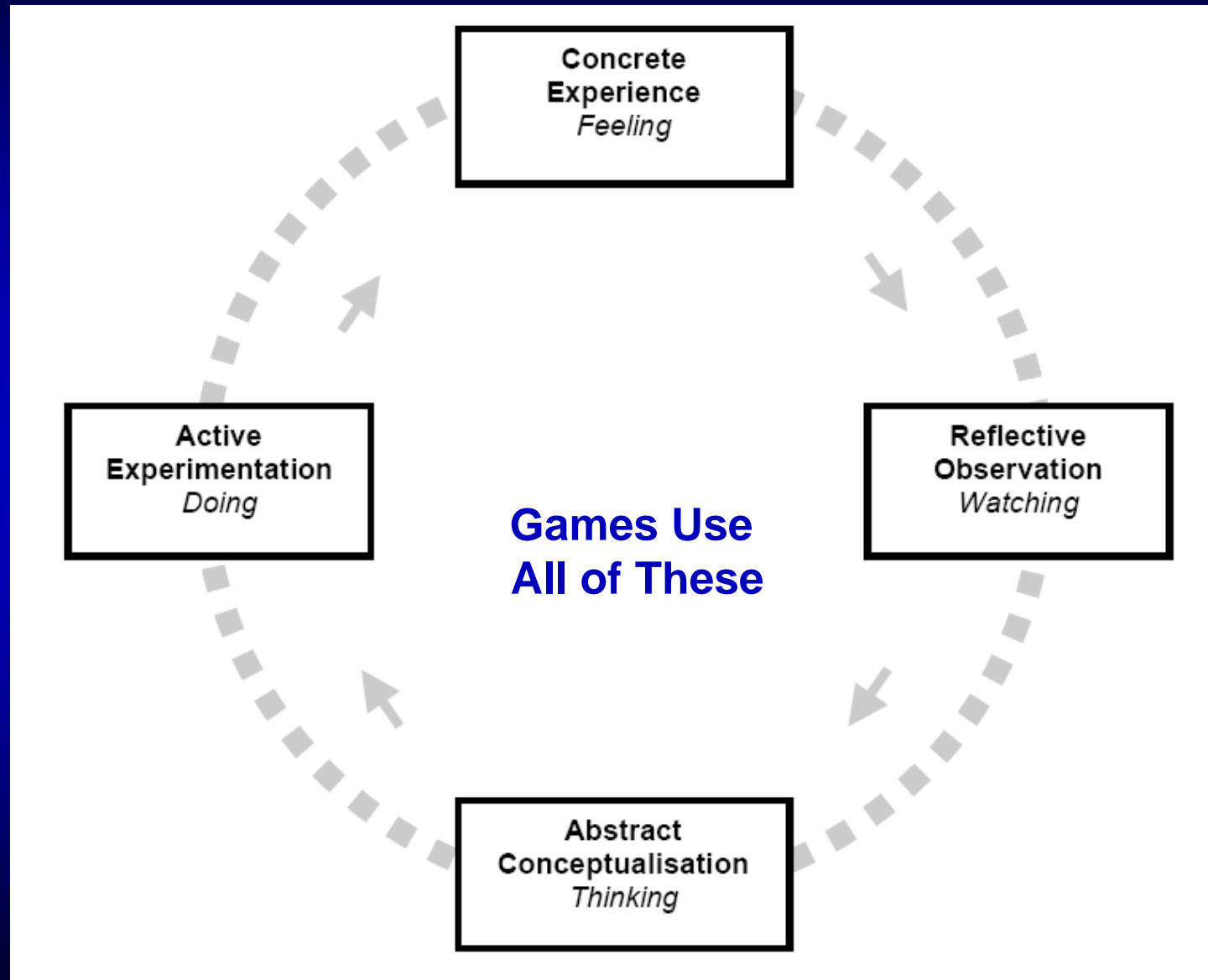
Tactical Questioning



Measures of Effectiveness

- **Education** – degree to which people learn
- **Cost** – price to achieve equivalent learning
- **Marketing** – price to deliver a message
- **Familiarization** – ability to understand people, places, objects, and events without the real encounter
- **Therapy** – improving psychological or physical condition

Kolb's Learning Styles



In-Game Learning Characteristics

- **Increasing Complexity**
 - From Passive, to Experimental, to Active, to Proficient
- **Constructivism**
 - Building the players internal understanding of the game world
- **Opportunity to Redo**
 - Free to make mistakes
- **Feedback**
 - Action – immediate response
 - Strategic – long term effects
 - Results – rewards for accomplishment

Effective Game System Qualities

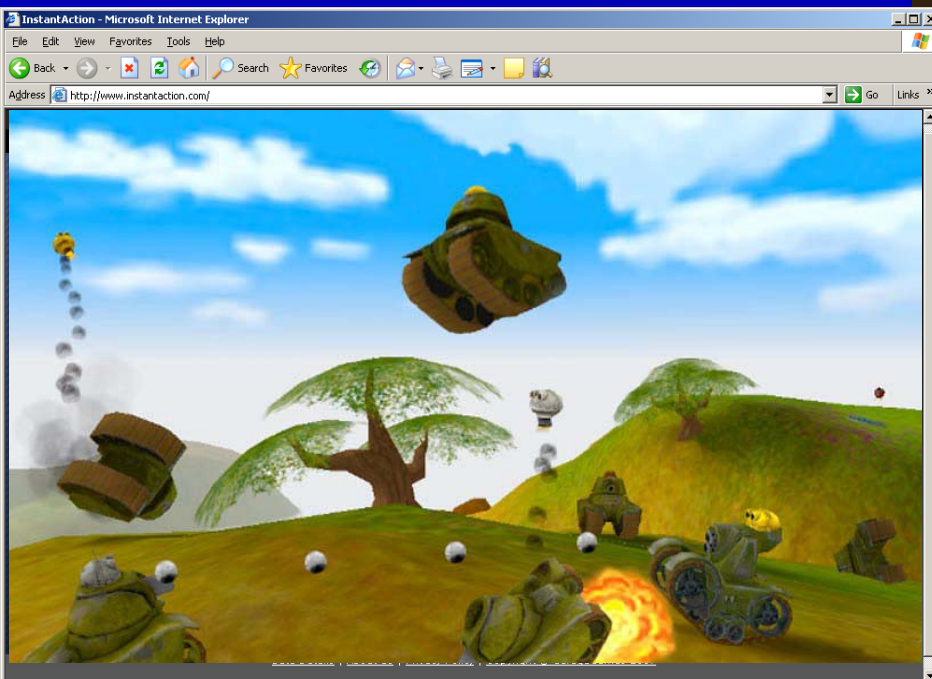
- **Ease of Install**
- **Self-Explanatory Start (with or without manual)**
- **Clarity of Learning Objective**
- **Backstory Development**
- **Clarity of Play Objective**
- **Play Mechanics**
- **Usability of Interface**
- **Quality of Learning Achieved**
- **Scoring/Measurement Method**
- **Student Performance Feedback**
- **Richness of Environment (Replayability)**
- **Innovative Concepts (WOW! Factor)**
- **Applicability to Multiple Domains (with skin change)**

Evaluation Method

Evaluator:		Game Wizard																Comments
Criteria	Qualify as Serious Game (Y/N)	Ease of Install	Self-Explanatory Start	Clarity of Learning Objective	Backstory Development	Clarity of Play Objective	Play Mechanics	Usability of Interface	Quality of Learning Achieved	Scoring/Measurement Method	Student Performance Feedback	Richness of Environment	Innovative Concepts	Applicability to Multiple Domains	Total Score	Weighted Score	Percentage (based on weighted Score)	
	Score 1 (Low) to 5 (High)																	
Weighting		1	1	1	1	1	1	1	2	1	1	1	1	1				
Great Game	Y	5	3	4	3	2	3	2	3	4	5	3	4	3	44	47	72%	This is a really great concept that teaches people how to assemble widgets into bigger watchets safely and efficiently. The game is a prototype so it requires some study to figure out the objective and how to work the controls.
Sad Game	Y	1	2	3	2	3	2	2	3	1	1	5	3	1	29	32	49%	The game is very difficult to install and it is not clear how the player is supposed to get started. There is no story, no scoring, and no feedback. But they used the new GameEngine7 which has awesome graphics.
Not a Game etc.	N	5	5	3	4	4	3	4	3	3	3	2	1	2	42	45	69%	This is a really nice web-based training course. It included a small snippet of game video to provide the backstory, but it does not really use game technology in conveying the lesson. I think it does not qualify as a Serious Game according to the definition for this contest.
															0	0	0%	
															0	0	0%	
															0	0	0%	

Future Directions

- **Web-based Games**
 - Direct Action, Quake Live
- **Virtual Worlds**
 - Second Life, There
- **Mobile Games**
 - Cell phone, Netbook



Serious Games Events

- **Serious Games Showcase & Challenge**
- **Game Developers Conference, Independent Game Festival**
- **Serious Games Initiative & Summit**
- **Federal Virtual Worlds Consortium**
- **Defense GameTech Conference**

Discussion Portals

- <http://www.seriousgames.org/>
- <http://seriousgamesportal.blogspot.com/>
- <http://www.seriousgamessource.com/>

Serious Games Showcase & Challenge

- Using Serious Games to identify innovative game-based solutions to training problems
- Challenge is open to student teams, small and large business, and government

SERIOUS games
SHOWCASE & CHALLENGE

PRESENTED AT I/ITSEC 2006

ENTER YOUR SERIOUS GAMES TODAY

ARE YOU AN ASPIRING SERIOUS GAMES DEVELOPER?
DO YOU HAVE A GAME BASED SOLUTION TO A MILITARY TRAINING NEED?

Be one of the 12 students and very small business development teams selected to present at the challenge

This is your chance to showcase your work in front of thousands of people on the I/ITSEC show floor

ENTER YOUR MOD OR ORIGINAL GAME BY JULY 31ST

WIN YOUR SHARE OF OVER \$20K IN CASH AND PRIZES

WWW.IITSEC.ORG
WWW.SGSCALLENGE.COM

Contact Barbara McDaniel at bmcdaniel@nda.org
or Debbie Dyson at ddyson@nda.org for more information.

TRAINING THE 21ST CENTURY JOINT FORCE
MISSION FOCUSED TO ACHIEVE WARPUSHING EXCELLENCE

SERIOUS GAMES
SHOWCASE AND CHALLENGE

EXPANDED ELIGIBILITY FOR '07

ENTER YOUR GAME BASED TRAINING AND EDUCATION APPLICATION

3 DISTINCT CATEGORIES
STUDENT
INDIVIDUAL / SMALL BUSINESS
LARGE BUSINESS

SHOWCASE YOUR WORK IN FRONT OF TOP GAMING, SOFTWARE AND SYSTEM INTEGRATION COMPANIES

challenge games 2007

ENTER YOUR GAME BY AUGUST 31ST
UP TO 12 AWARDEES AT I/ITSEC '07

WWW.IITSEC.ORG
Visit WWW.SGSCALLENGE.COM for detailed information
Questions: info@sgchallenge.com

InterService/Industry Training, Simulation & Education Conference
Maintaining the Edge... Transforming the Force

SERIOUS GAMES
SHOWCASE AND CHALLENGE

ENTER YOUR GAME BASED TRAINING AND EDUCATION APPLICATION

SHOWCASE YOUR WORK IN FRONT OF TOP GAMING, SOFTWARE AND SYSTEM INTEGRATION COMPANIES

ENTER YOUR GAME BY AUGUST 31ST

3 DISTINCT CATEGORIES
STUDENT
INDIVIDUAL / SMALL BUSINESS
LARGE BUSINESS
UP TO 12 AWARDEES

INTERSERVICE/INDUSTRY TRAINING, SIMULATION & EDUCATION CONFERENCE
MAINTAINING THE EDGE... TRANSFORMING THE FORCE

Visit WWW.SGSCALLENGE.COM for detailed information
Questions: info@sgchallenge.com

WWW.IITSEC.ORG

SERIOUS GAMES
SHOWCASE & CHALLENGE

ENTER YOUR GAME BASED TRAINING AND EDUCATION APPLICATION

SHOWCASE YOUR WORK IN FRONT OF TOP GAMING, SOFTWARE AND SYSTEM INTEGRATION COMPANIES

ENTER YOUR GAME BY SEPTEMBER 15

4 DISTINCT CATEGORIES
STUDENT
INDIVIDUAL / SMALL BUSINESS
LARGE BUSINESS
GOVERNMENT
UP TO 12 AWARDEES AT I/ITSEC '09

WWW.IITSEC.ORG

INTERSERVICE/INDUSTRY TRAINING, SIMULATION & EDUCATION CONFERENCE
Visit WWW.SGSCALLENGE.COM for detailed information
Questions: sgchallenge@gmail.com

2006

2007

2008

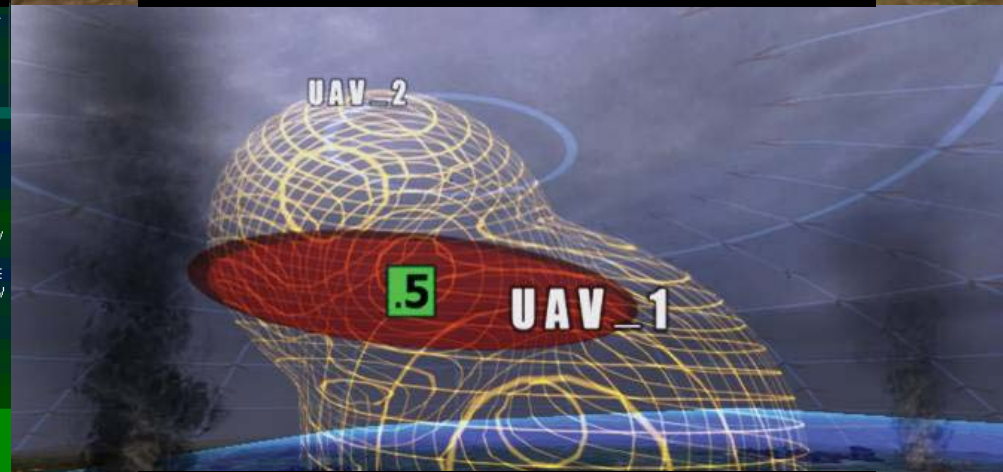
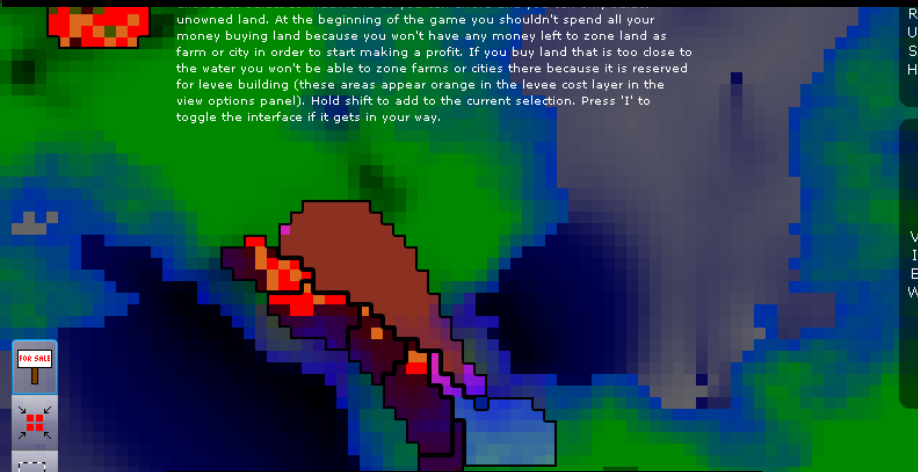
2009

2008 SGS&C Winners



Small Business & Overall: Burn Center

People's Choice: Direct Action



Student: Age of Ecology

Government: Geo Commander

2009



John A. ...

SERIOUS GAMES

SHOWCASE & CHALLENGE

ENTER YOUR GAME BASED TRAINING
AND EDUCATION APPLICATION

SHOWCASE YOUR WORK
IN FRONT OF TOP GAMING,
SOFTWARE AND SYSTEM
INTEGRATOR COMPANIES

ENTER YOUR GAME
BY SEPTEMBER 15



INTERSERVICE/INDUSTRY TRAINING,
SIMULATION & EDUCATION CONFERENCE

Visit www.sgschallenge.com
for detailed information
Questions: sgschallenge@gmail.com

4 DISTINCT CATEGORIES

STUDENT
INDIVIDUAL / SMALL BUSINESS
LARGE BUSINESS
GOVERNMENT

UP TO 12 AWARDEES
AT I/ITSEC '09

www.iitsec.org

<http://www.sgschallenge.com/>



References

- Abt, C. (1970). *Serious Games*. New York: The Viking Press.
- Aldrich, C. (2009). *The Complete Guide to Simulations and Serious Games*. Pfeiffer Publishing.
- Dibbell, J. (2006). *Play Money*. Basic Books.
- Kolb, D. (1984). *Experiential Learning: Experience as the source of learning and development*. Prentice-Hall.
- Zyda, M. (September 2005). “From visual simulation to virtual reality to games”. *IEEE Computer*.
- Serious Games Source.
<http://www.seriousgamework.com/>