



VK Computer Games

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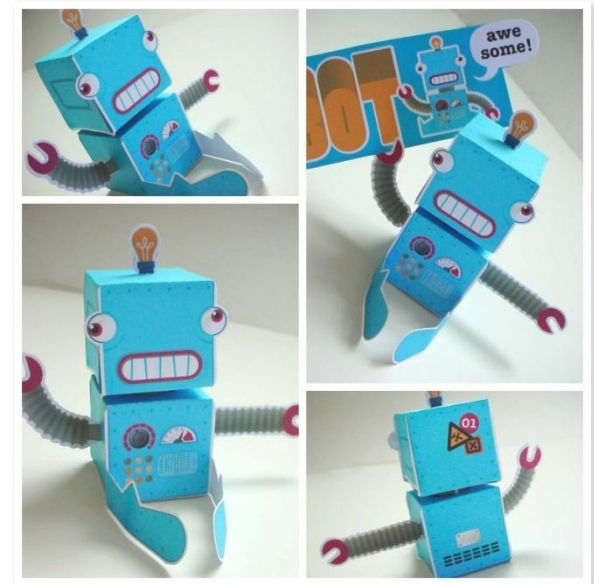
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Agenda



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- Organization
 - Topics & Goals
 - Schedule
 - Modalities
- Introduction
 - Why computer games?
 - Historical background



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Goals



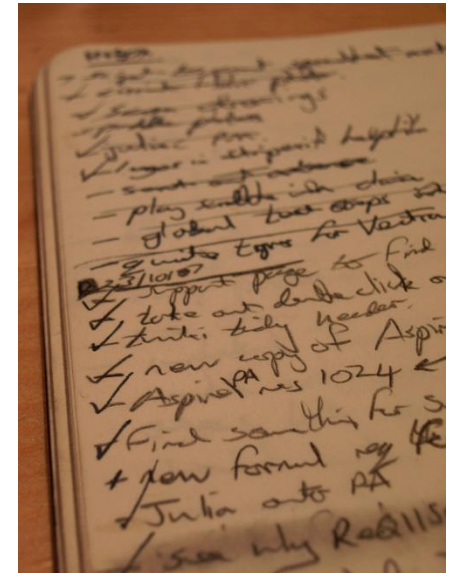
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- Development and implementation of a simple computer game
 - Get into business
- Application and extension of existing knowledge
 - Use what you already learned here



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- Basics, history & context
- Game design & game project plans
- Game development principles
- Graphics and sound
- Game physics and collisions
- Multiplayer & networking
- Game input and output devices
- Artificial intelligence

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Schedule



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- March, 6th – Now ...
- March 13th – Planning and projects, game loop
- March 20th – Sprites, images, animation & sound
- March 27th – Game physics, algorithms, concurrency
- April 3rd – Game HCI
- June 5th – 3D Visualization

- *Killer Game Programming in Java*
 - Author: Andrew Davison
 - Publisher: O'Reilly
- For the test
 - Readings
 - Slides

This course is “**prüfungsimmanent**”

- Be there!
- Work with us!
- Create 2 games!
- Present your results!
- Pass the test!

Modalities: Implementation



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- Teamwork
 - Team G with $|G| = 3$
 - TEAM = Toll Ein Anderer Machts ??
 - Same team for both projects



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Modalities: Project A



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- Implement a Java game with
 - Animated sprites
 - Parallax scrolling in 3+ layers
 - Sound (background and events)
 - Collision detection
 - Physics (one of these or similar)
 - Bounce, Gravity or (De-)Acceleration
 - Submit 'till April 20th 2009



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Modalities: Project B



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Design & implement a game of your choice

- Have an idea
- Choose implementation platform
- Write a project design & plan
 - Submit plan until May 15th 2009
 - A template will be available
- Finish your project
- Present your game on June, 12th 2009

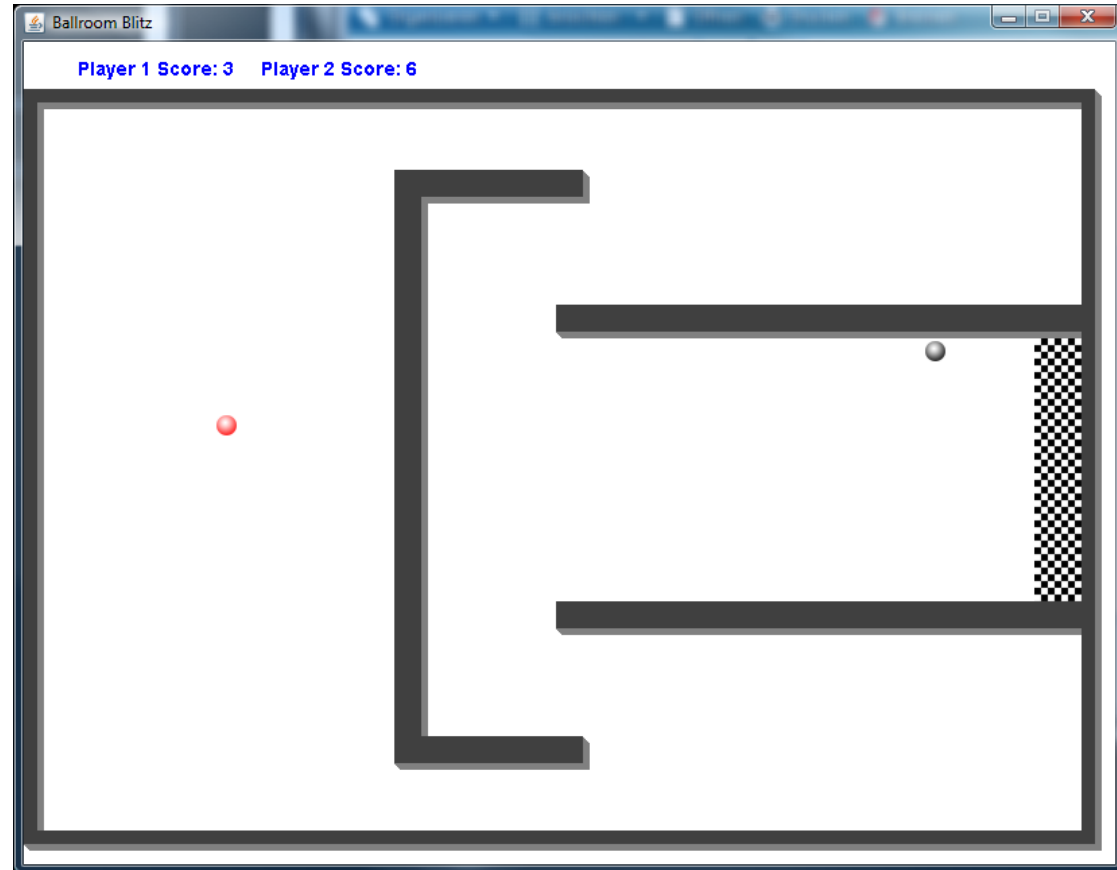
Last year's projects ...



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Ballroom Blitz

- Java ~ 100 cumulative hours of work
- 2 Player
- Bouncing balls physics
- Multiple levels



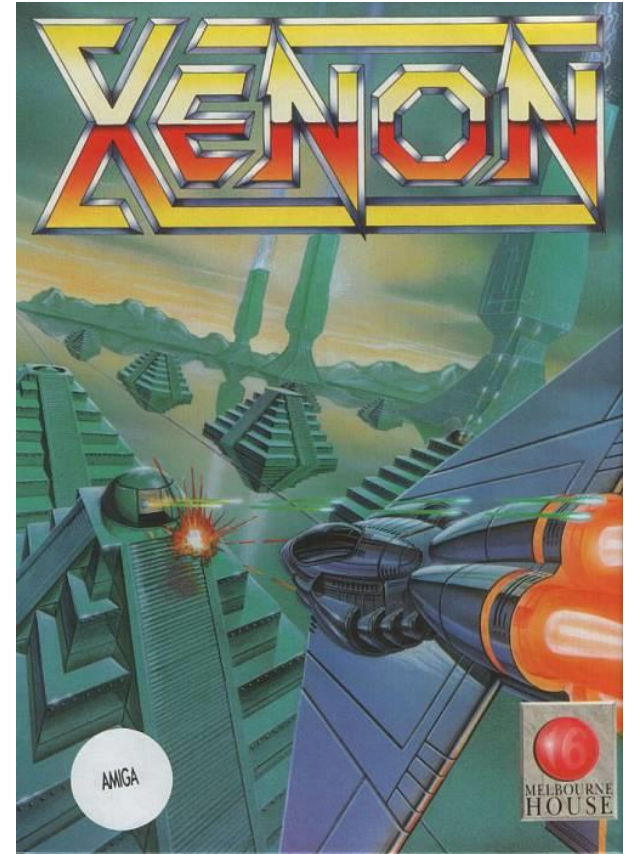
Last year's projects ...



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Xenon-Clone

- Space-Shooter
- Java ~ 120 h of work
- Sound from original game
- 1 level, Wiimote input

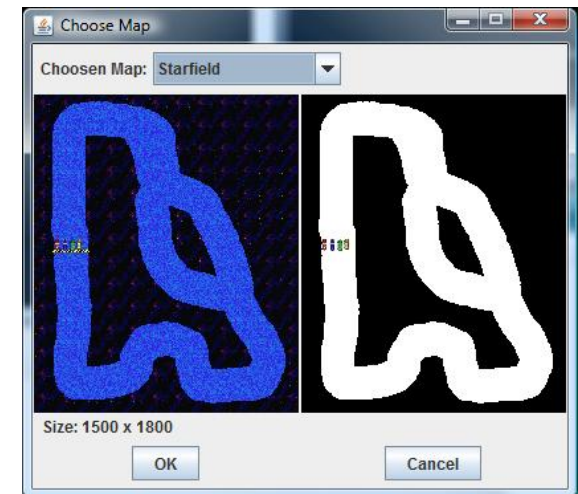


Last year's projects ...



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- Racer
- Top down view car racing game
- Java
- Including level editor etc.



Modalities: Exam



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Multiple choice test at presentation date
-> 12.06. 2009

- Study
 1. Presentation slides and
 2. Readings

Course enrollment



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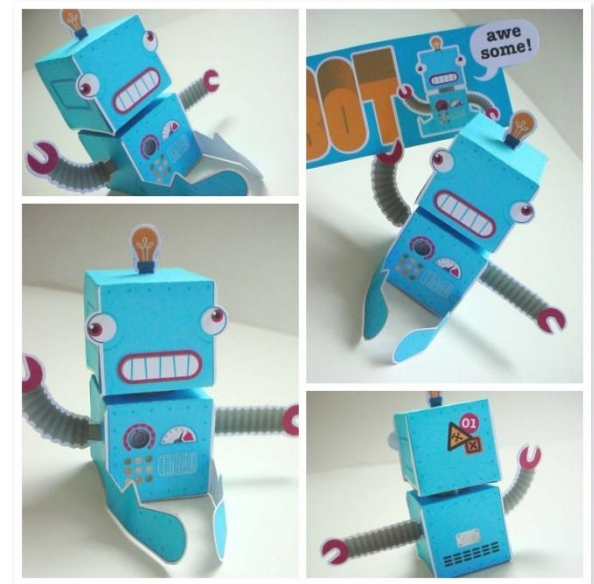
- Put your signature on the list ...

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Why computer games at a university?



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- Commercial relevance
 - Games are a big business
 - Mobile to PC to game consoles
- Research and technology
 - Games are related to innovation (HW & SW)
 - Games are issue of research
- Application of knowledge in game dev.
 - Maths, physics, algorithms, data structures
 - Project management & planning

Industry Facts: ESA (US)



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- Gaming industry economics & sales:
 - 2003-2006 the annual rate (gain) exceeded 17% (cp. <4% for the US economy)
 - Game console software sales: \$6.6 billion / 153.9 million units in 2007
 - Computer games sales: \$910.7 million / 36.4 million units in 2007
 - Portable software sales: \$2.0 billion / 77.5 million units in 2007

Source: esa, entertainment software association - <http://www.theesa.com/>

Industry Facts: ESA, 2006



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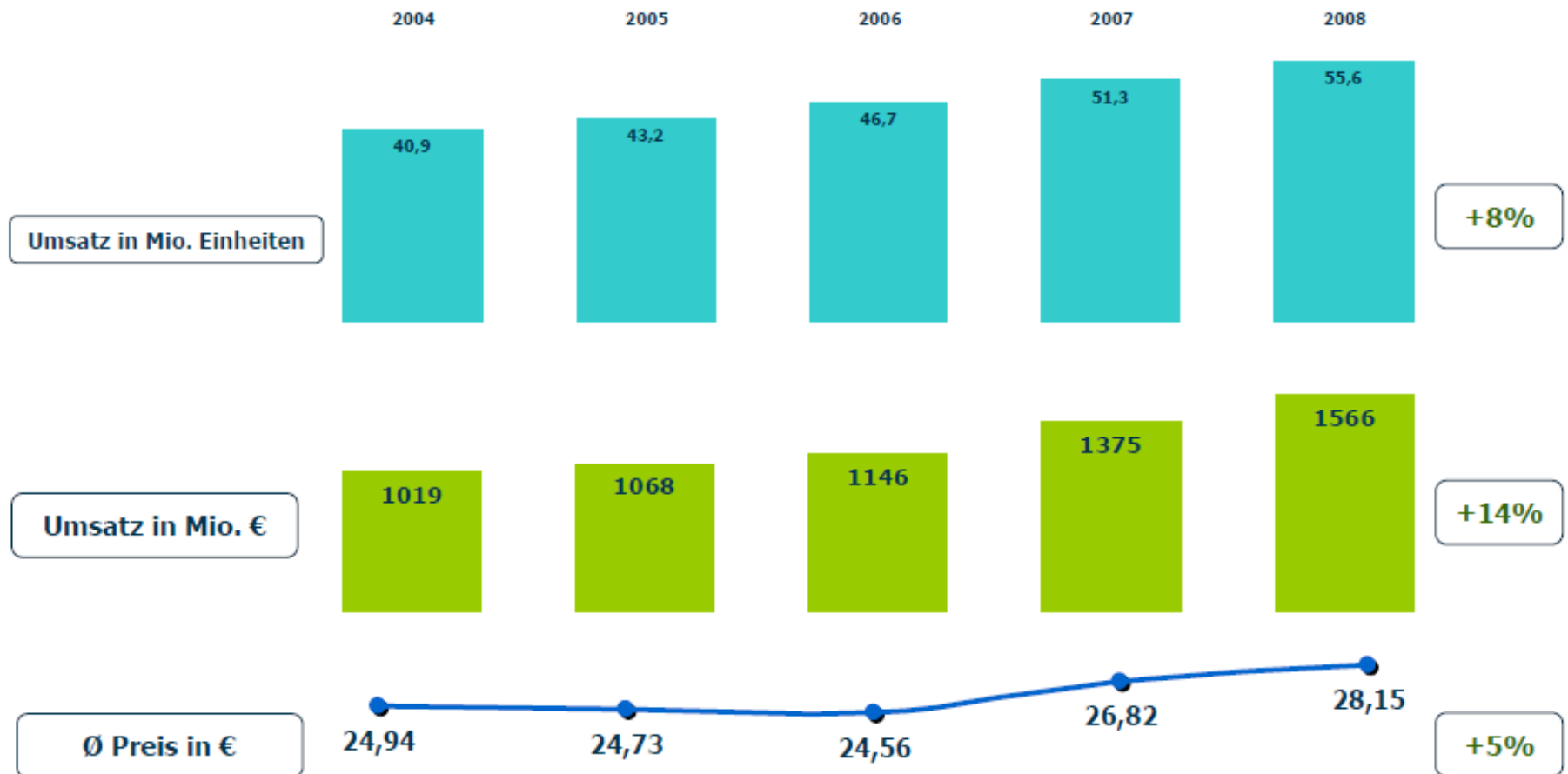
- Gamers facts:
 - The average American gamer is 35 years old and has been playing for 13 years.
 - 38% of American households have a video game console, 65% play video / PC games
 - 56% percent of online game players are male and 44% are female
 - Adult women represent a greater portion of gamers (33 %) than boys age ≤ 17 (18 %)

Source: esa, entertainment software association - <http://www.theesa.com/>

German Game Industry



<http://www.uni-klu.ac.at>



Zeitraum: Januar-Dezember 2004-2008

German Game Industry



<http://www.uni-klu.ac.at>

		2007	2008	08 vs 07
GAMES TOTAL	Stückzahlen in Mio.	51,3	55,6	8%
	Umsatz in Mio. €	1375	1566	14%
	Ø Preis in €	26,82	28,15	5%
PC	Stückzahlen in Mio.	24,5	23,8	-3%
	Umsatz in Mio. €	471	438	-7%
	Ø Preis in €	19,21	18,45	-4%
Konsole	Stückzahlen in Mio.	15,1	18,7	24%
	Umsatz in Mio. €	544	744	37%
	Ø Preis in €	36,13	39,78	10%
Handheld	Stückzahlen in Mio.	11,7	13,2	13%
	Umsatz in Mio. €	360	384	7%
	Ø Preis in €	30,79	29,16	-5%

Zeitraum: Januar-Dezember 2007-2008

German Game Industry: Details on the consumers



<http://www.uni-klu.ac.at>

PC-Spiele & Videospiele

2006	2007	2008
------	------	------

12,8	13,3	13,3
3,7	3,9	4,2
90	103	117
46,7	51,3	55,6
1146	1375	1566
24,56	26,82	28,15

Käufer in Mio.

Ø Gekaufte Spiele in Einheiten

Ø Ausgaben in €

Stückzahlen in Mio.

Umsatz in Mio. €

Ø Preis in €

PC-Spiele

2006	2007	2008
------	------	------

9,1	8,9	7,9
2,9	2,8	3,0
54	53	56
26,2	24,5	23,8
492	471	438
18,75	19,21	18,45

Konsolen

2006	2007	2008
------	------	------

3,8	3,9	4,4
3,5	3,9	4,2
113	140	168
13,5	15,1	18,7
434	544	744
32,25	36,13	39,78

Handhelds

2006	2007	2008
------	------	------

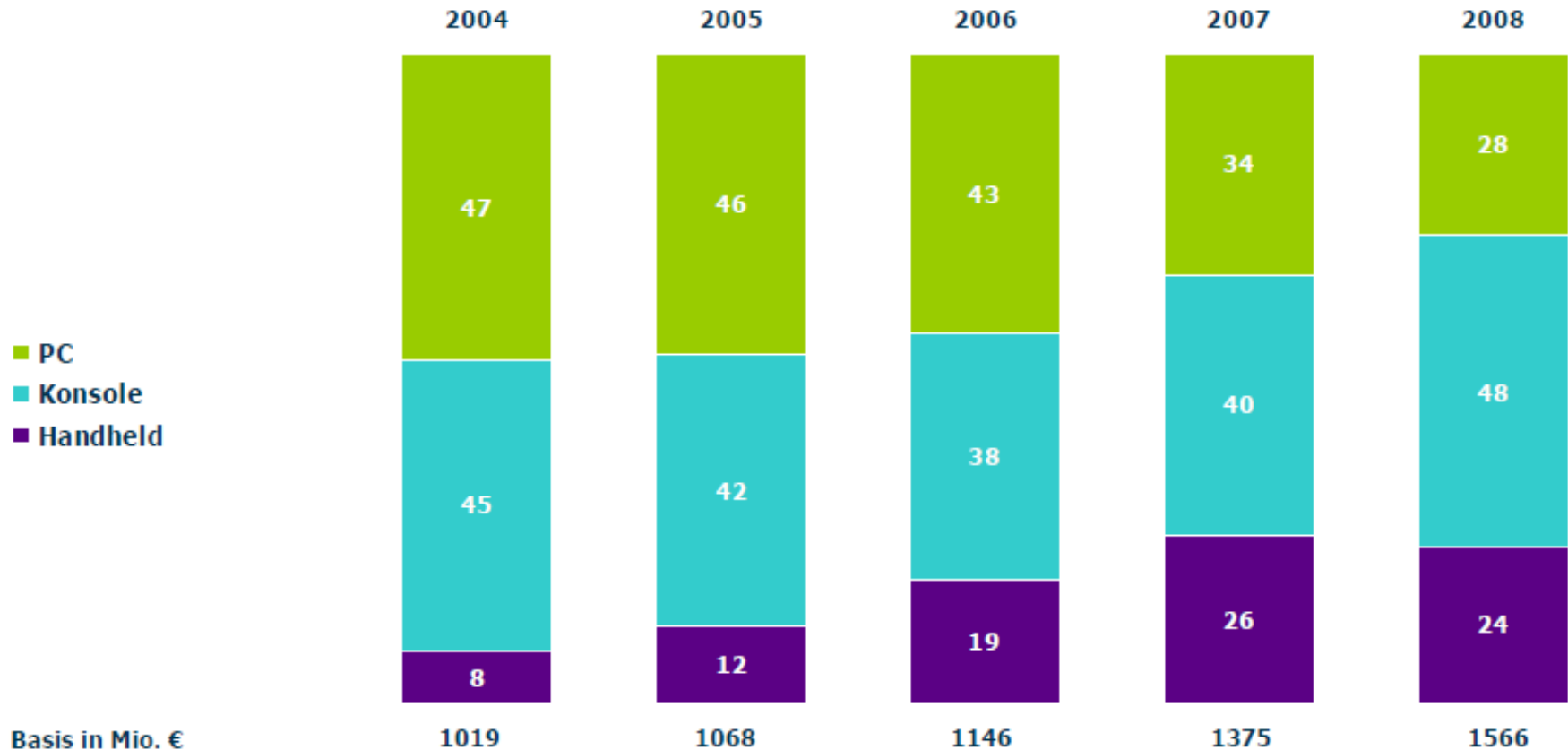
2,3	3,7	4,4
3,0	3,2	3,0
95	97	88
7,0	11,7	13,2
220	360	384
31,60	30,79	29,16

Zeitraum: Januar-Dezember 2006-2008

German Game Industry: Market share



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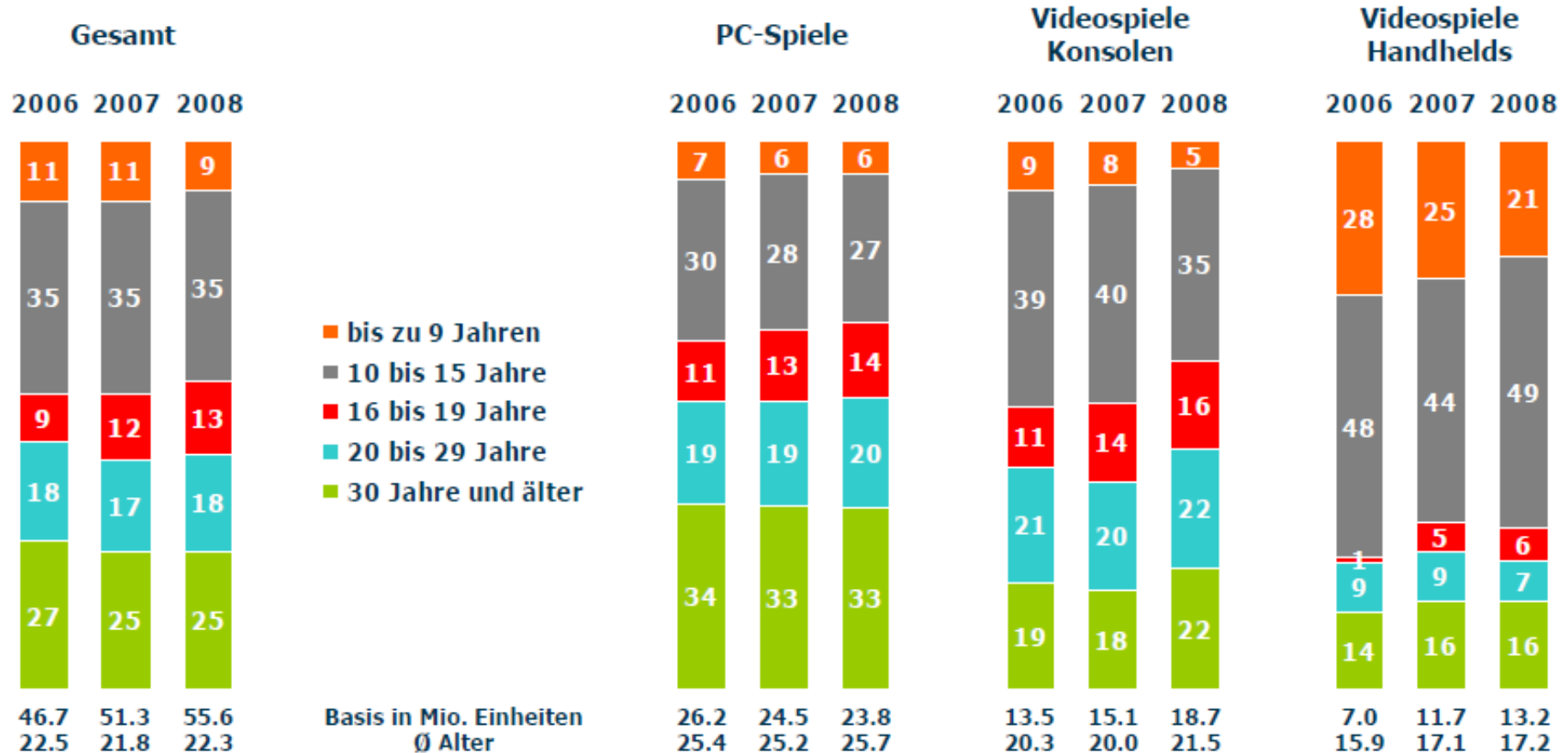


Zeitraum: Januar-Dezember 2004-2008

German Game Industry: How old are gamers?



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Zeitraum: Januar-Dezember 2006-2008

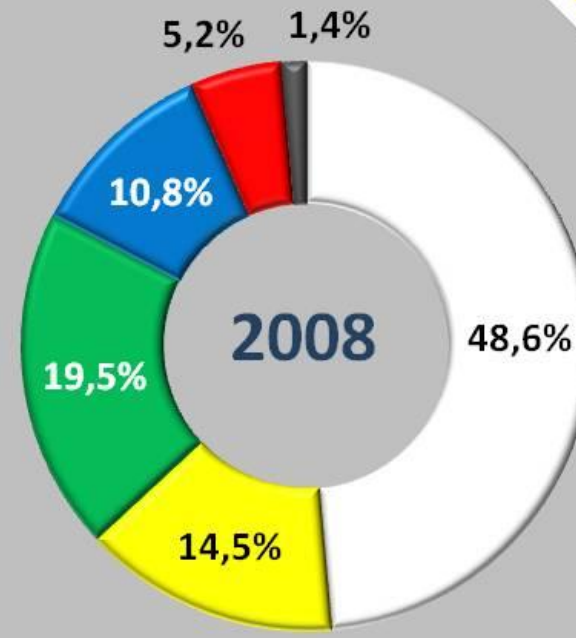
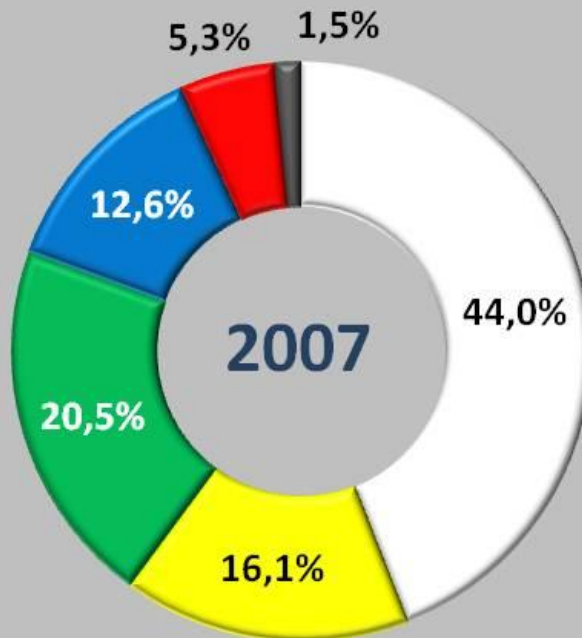
German Game Industry: Restrictions - USK



<http://www.uni-klu.ac.at>

Verteilung der Alterskennzeichen für Computerspiele

bezogen auf alle Prüfungsvorgänge der USK



Freigegeben ohne Altersbeschränkung



Freigegeben ab 6 Jahren



Freigegeben ab 12 Jahren



Freigegeben ab 16 Jahren



Keine Jugendfreigabe



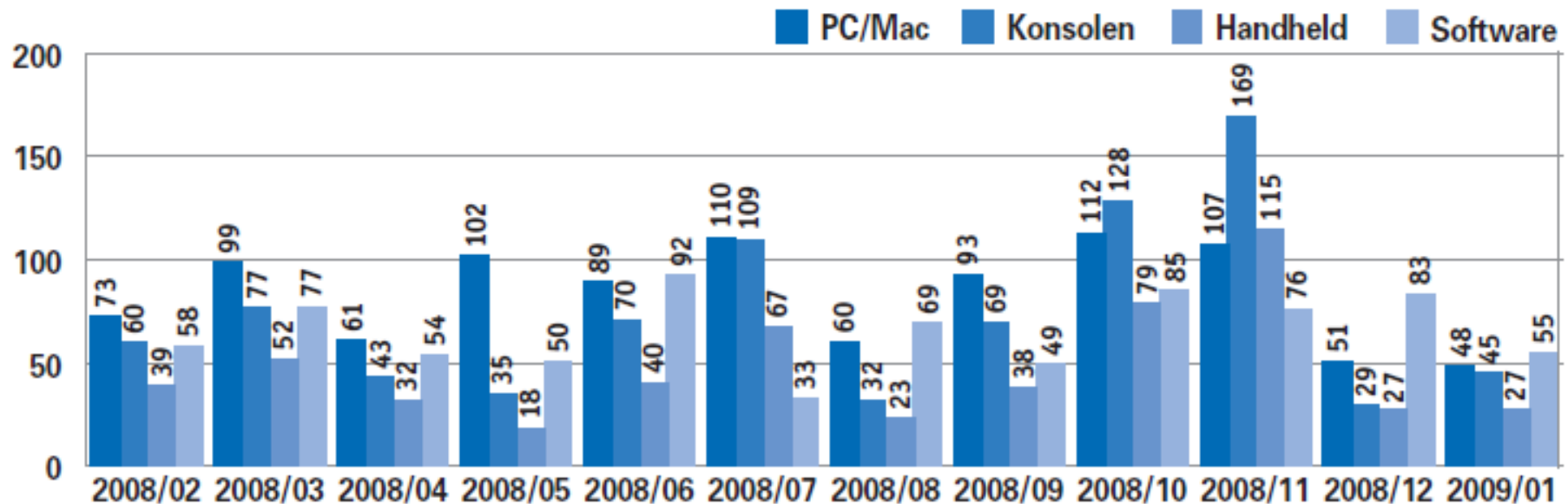
Keine Kennzeichnung

Germany: Releases of the last 12 months



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Anzahl Releases der letzten zwölf Monate



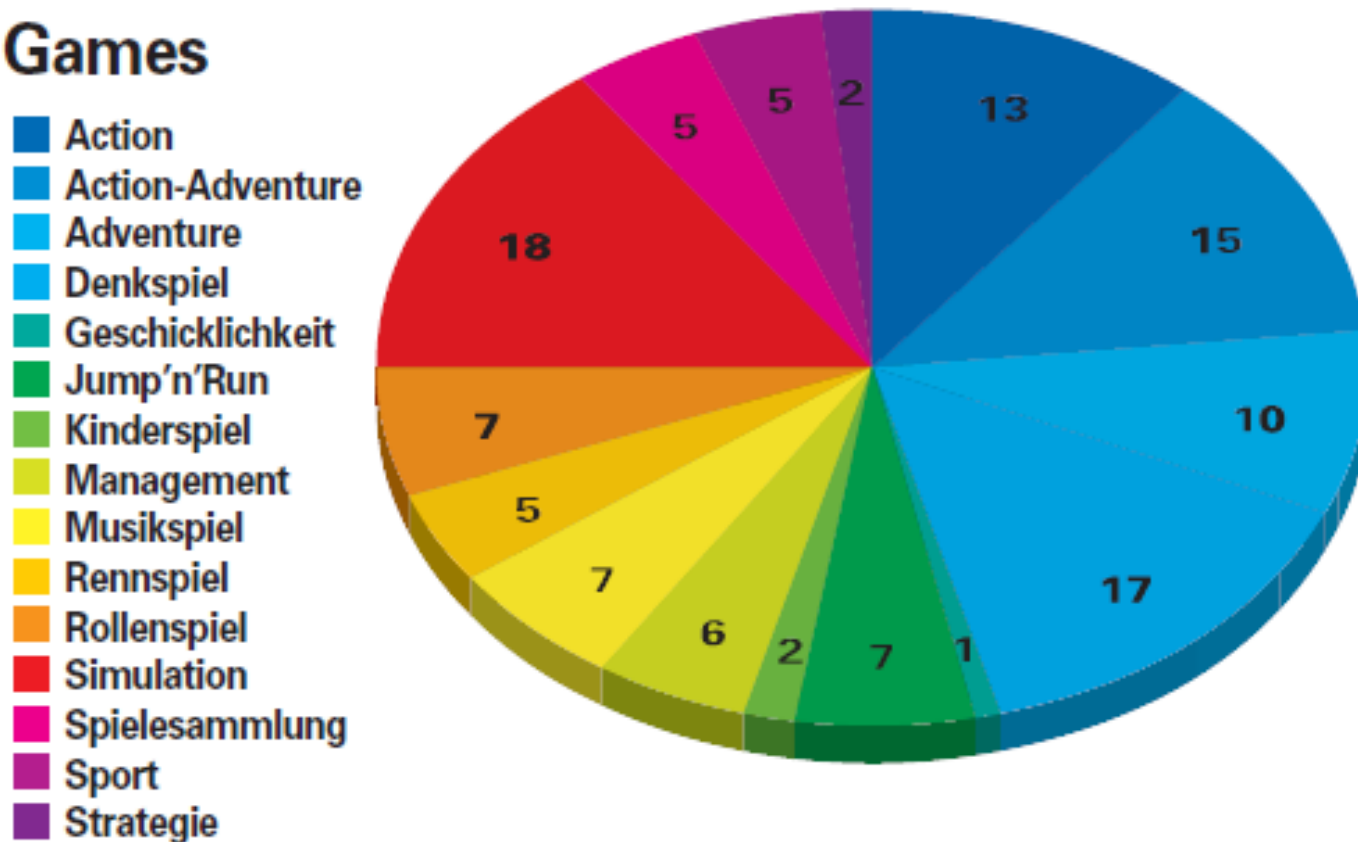
Source: games.markt

Germany: Releases % in Genre



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Games

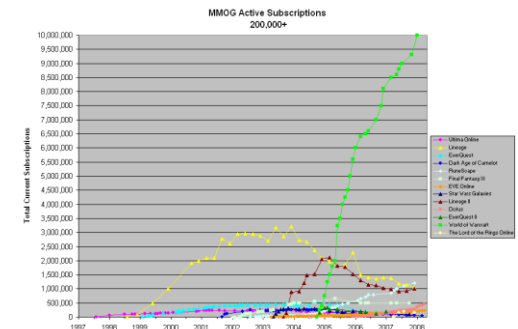


MMOG Economics



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- WoW has >11 Mio. subscribers (Oct. 2008)
 - Monthly fees
 - Add-ons & DLC
 - World of WarCraft: Wrath of the Lich King was Xmas best seller at amazon.de



Source: <http://www.mmogchart.com/Chart1.html>

Example: Super Mario



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- Jump & Run von Nintendo
- Konsolenspiel für NES
 - World -> SNES & GameBoy
 - Mario64 -> Nintendo64
 - Super Paper Mario -> Wii
 - ...
- Erfolgreichstes Videospiel überhaupt
 - 295 Millionen verkaufte Einheiten



Example: LBP



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- Little Big Planet
 - A collaborative platformer
 - 2.5 D Jump & Run
- Awards
 - Academy Of Interactive Arts & Sciences 2009
 - 8 Awards including “best overall game”
 - E3 Awards
 - Best console game,
 - best casual and social game
 - etc.



Example: LBP



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- Videos:
 - Danger – Showing the gameplay
 - Sackzilla – Showing the editor



Example: Guitar Hero & Rockband



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- Guitar Hero (Activision) & Rockband (EA)
 - Revenue of 2.3 billion dollars
 - Within three years
- Guitar Hero III – Legends of Rock
 - First game exceeding 1 billion \$ revenue



Example: Popcap Games



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Popcap Games creates „casual games“

- Most popular game: Bejeweld
 - 150 million downloads,
 - 25 million sold units
- Distributes on
 - Xbox Marketplace
 - PSN
 - PC (Steam, own shop, boxed)



- Consumer Hardware
 - 3D graphic cards, Open GL for consumers
 - Video decoding (HD video)
 - Cp. Nvidia & ATI/AMD graphic cards
 - Input and output methods
 - High performance mouse
 - Sensors (cp. Wiimote)
 - 3D screens, shutter
 - PC Setup
 - PSUs, cooling, etc.





- Consumer Entertainment Hardware
 - PS3: 1 (control) +1 (PPC) +7 (SPE) =9 Cores
 - XBox: 3 Cores w. Hyperthreading \sim 6 Cores
 - Compare to Wii, DVD recorder, routers, ...
- Consumer Software
 - 3D interfaces
 - Google Earth
 - Brockhaus Multimedial
 - Aero, Beryl, KDE4, etc.

Computer Games & Computer Science



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- Computations
 - Using shaders for parallel processing
 - High performance clusters, CUDA
- Serious Games
 - Human Computing (v. Ahn)
 - Reading “Games with a purpose”!
- Educational Games
 - Military training
 - E-Learning, pedagogical (e.g. common sense)

Example:

Hazmat Hotzone



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- 3D training for fire fighters
- Handling hazardous materials
 - E.g. terrorism, ...
- Employs Unreal engine
- Developed at CMU



Quelle: http://www.gamasutra.com/features/20051102/carless_01b.shtml

US Army leadership development (CSU)



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- Stories of soldiers are converted to „knowledge“
- Knowledge is applied in training scenarios for soldiers
 - Decisions in combat and surveillance scenarios
 - Interaction with locals (customs, etc.)



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Games as part of our culture ...



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- Common sense & knowledge
 - Lara Croft & Pac-man
 - Mario Bros. & Sonic
- Merchandising
 - E.g. Game & Film
- Many people have/had contact with games
 - PC, Nintendo, Playstation, etc.



Games as part of our culture ...



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Percentage of chart which looks like Pac-man



Looks like Pac-man



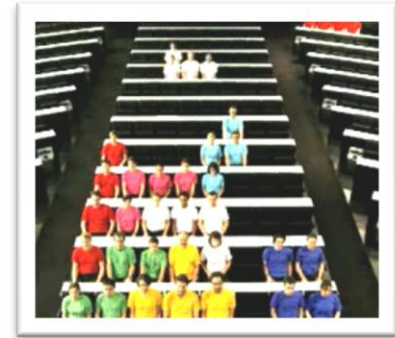
Does not look like Pac-man

Games as part of our culture ...



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- Human TETRIS Performance
 - GAME OVER Project
 - http://www.youtube.com/watch?v=G0LtUX_6IXY
- Real Life Donkey Kong
 - Bam Margera
 - http://www.youtube.com/watch?v=_KyIpMtvJvE
- Real Mario
 - Gordon College
 - <http://www.youtube.com/watch?v=R0fCnf8uWxw>



Acceptance and controversial issues



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“The disturbing material in *Grand Theft Auto* and other games like it is stealing the innocence of our children and it's making the difficult job of being a parent even harder ... I believe that the ability of our children to access pornographic and outrageously violent material on video games rated for adults is spiraling out of control.”

- (*Hillary Clinton, 2005*)

Acceptance(Rock'n'Roll)



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"The effect of rock and roll on young people, is to turn them into devil worshippers; to stimulate self-expression through sex; to provoke lawlessness; impair nervous stability and destroy the sanctity of marriage. It is an evil influence on the youth of our country."

- Minister Albert Carter, 1956

Acceptance



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Similar statements to

- Comics (1954)
- Phone (1926)
- Film (1909)
- Waltz (1816)
- Novels (1790)

Source: <http://www.wired.com/wired/archive/14.04/war.html>

Readings ...



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Readings until next week:

- Louis von Ahn, „Games with a purpose“, IEEE Computer, 2006
- <http://tinyurl.com/gc09hp>
 - Remember „games course 2009 home page“