The Massively Multiplayer Gaming Explosion –

from the PC, to the Console and then Mobile

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What is the Games market ?

What are the real demographics ?

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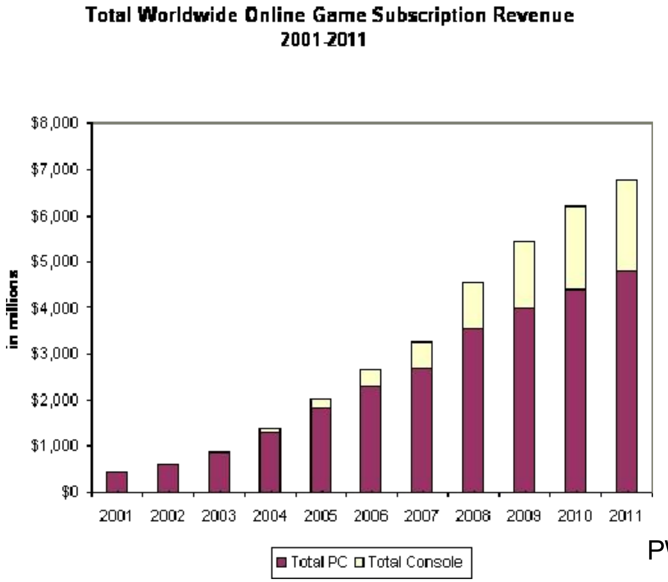
The Growth of the Games Industry (Direct Revenues)



PWC projects a conservative growth of the entire video game market to be 16.5% CAGR,
In the US Alone PWC expects a 12.9% CAGR through 2009

Video Game Market (US$ Millions)

Region	2000	2001	2002	2003	2004p	2005	2006	2007	2008	2009	2005–09 CAGR
United States	6,059	6,479	7,218	7,557	8,198	8,438	10,158	12,762	14,080	15,067	
% Change	–2.2	6.9	11.4	4.7	8.5	2.9	20.4	25.6	10.3	7.0	12.9
EMEA	4,003	4,281	5,015	5,315	5,980	6,759	8,656	11,161	13,026	14,312	
% Change	–3.0	6.9	17.1	6.0	12.5	13.0	28.1	28.9	16.7	9.9	19.1
Asia/Pacific	7,353	7,725	8,448	8,978	10,086	11,108	14,053	17,974	20,657	23,087	
% Change	0.0	5.1	9.4	6.3	12.3	10.1	26.5	27.9	14.9	11.8	18.0
Latin America	315	324	429	489	531	539	606	724	778	832	
% Change	–8.2	2.9	32.4	14.0	8.6	1.5	12.4	19.5	7.5	6.9	9.4
Canada	354	390	472	534	611	685	876	1,102	1,221	1,307	
% Change	–4.3	10.2	21.0	13.1	14.4	12.1	27.9	25.8	10.8	7.0	16.4
Total	18,084	19,199	21,582	22,873	25,406	27,529	34,349	43,723	49,762	54,605	
% Change	–1.7	6.2	12.4	6.0	11.1	8.4	24.8	27.3	13.8	9.7	16.5

Sources: PricewaterhouseCoopers LLP, Wilkofsky Gruen Associates

Games is segmented by game type, gaming platform, and number of players.

Genre

- **Strategy (RTS) & Role Playing (RPG)**
- **Sports & Extreme Sports**
- **Action/Adventure/Fighting**
- **Racing**
- **Shooters**
- **Family Entertainment/Children**
- **Casual**
- **Simulation and Serious Games**

Consumer

Hardcore/Core/Casual

Platform

- **Console**
  - Playstation / PS2 / PS3 (Sony)
  - Xbox / Xbox 360 (Microsoft)
  - GameCube / Wii (Nintendo)
- **PC Based**
- **Handheld**
  - DS (Nintendo)
  - PSP (Sony)
- **Mobile**
  - Cell phone (incl. Nokia NGage)
  - PDA

Business Model

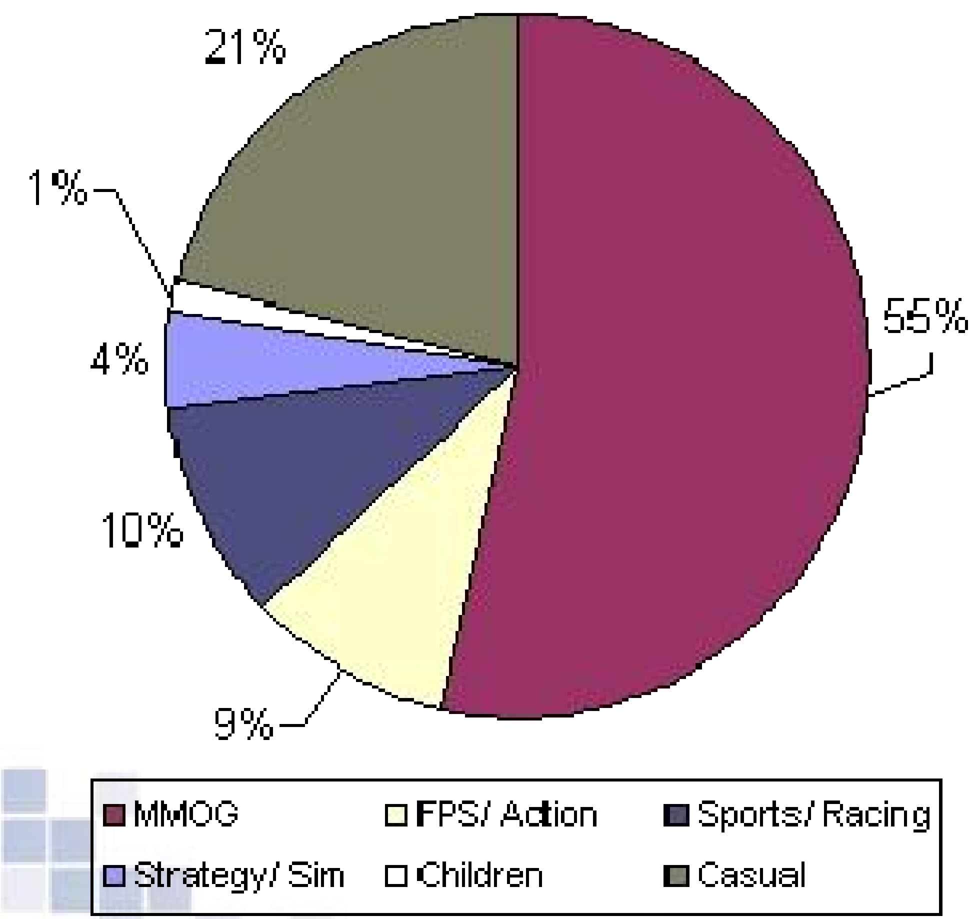
Retail Sales vs. Subscription
Per Game vs. Aggregation

Number of Players

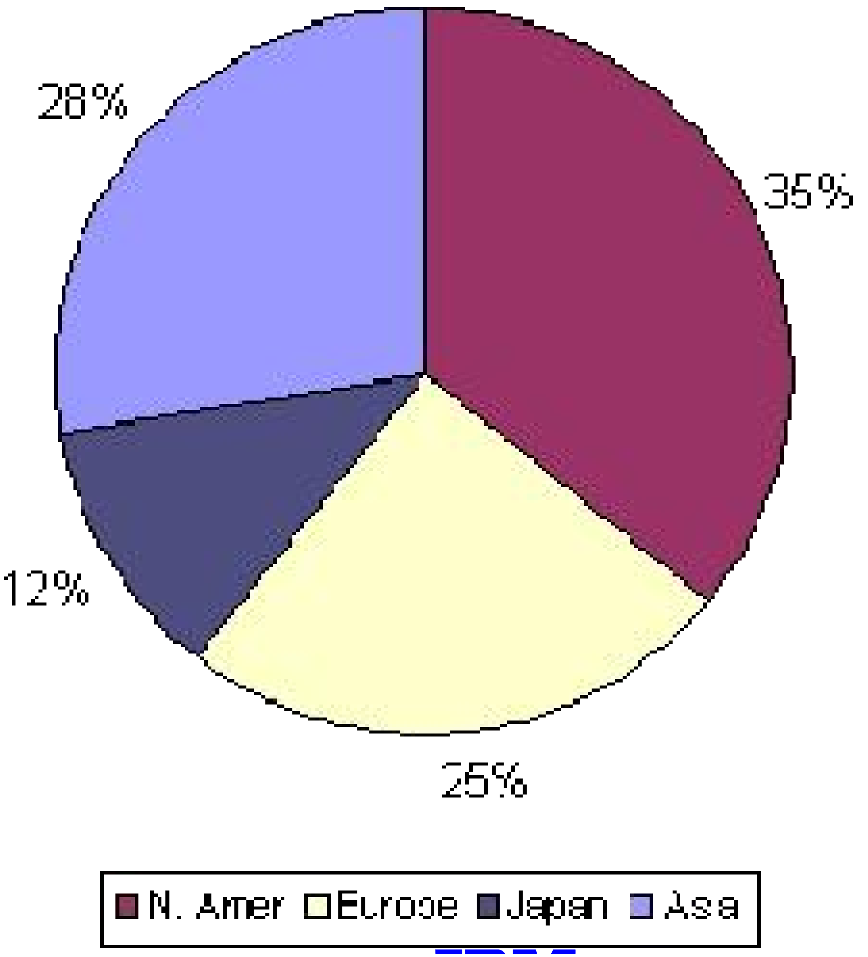
- **Single Player (SP)** – Individual game experiences on a single console or PC. Retail Business Model. (e.g. Nintendo)
- **Multi-Player (MP) –** Groups of 2-64 players hosted by a single server. Games are a set length and high-twitch. Subscription Business Model. (e.g. Xbox Live)
- **Massively Multi-Player – (MMP)** Thousands of people play on a hosted server game environment. Games are running 24/7. Subscription Business Model.(e.g.Everquest)

Online game revenue breakdown

Worldwide Online Game Revenue: 2005



Worldwide Online Game Subscription Revenue: 2011



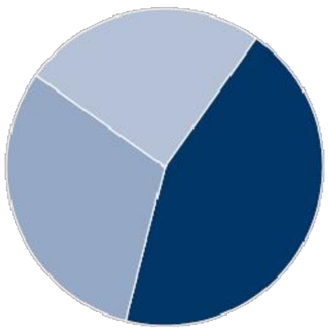
Source: [illegible] March 2006

Gamers: Do the facts match the stereo-type ?

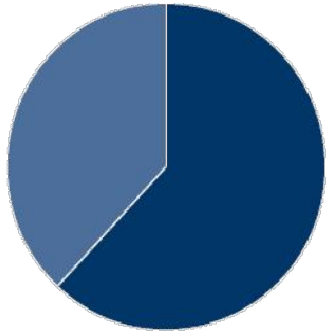
In 2005 25% of gamers were over the age of

The average game player age is:

33



The average age of the most frequent game purchaser is 40



42% of online players are Female

WOMEN age 18 or older represent a significantly greater portion of the game-playing population (30%) than boys age 17 or younger (23%).

Source ESA: Essential game Facts May 10th 2006

Gamers: Do the facts match the stereo-type ?

The stereotype of a game player as a shut-in, out of touch, isolated hermit is not supported by research. The following facts came from a Peter D. Hart Research report in 2004.

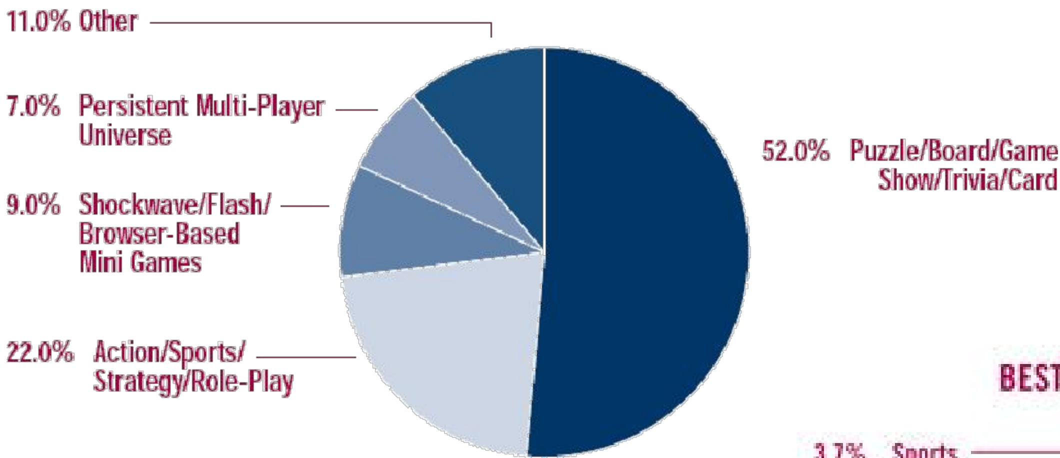
What else are Game Players Doing?

- 79% of game players, all ages, report exercising or playing sports 20 hours a month
- 45% of gamers volunteer an average of 5.4 hours a month
- 93% of game players also read books or daily newspapers
- 62% of game players consistently attend cultural events such as concerts museums or theater
- 51% of all gamers play games, in person, with other players

Source ESA: Essential game Facts May 10th 2006

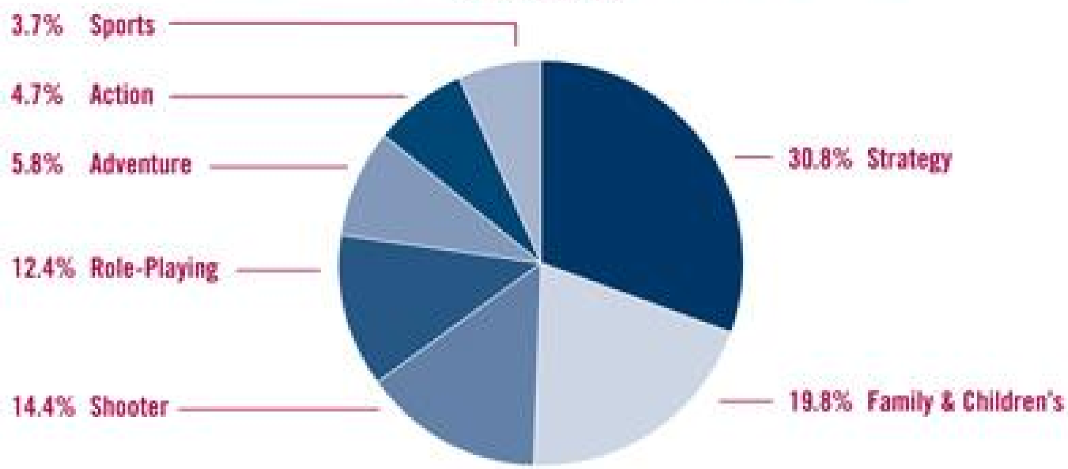
Who is playing what ?

What Kind of Games Are Played Online Most Often?



BEST-SELLING COMPUTER GAME SUPER GENRES

BY UNITS SOLD, 2005



Source: The NPD Group / Point-of-Sale Information

Marketplace trends

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Marketplace trends: new business model emerge

- THEN
  - Retail distribution of physical asset (cartridge, CD)
- NOW
  - New models appearing (digital downloads, subscriptions, ad-based)
  - "trial and error" phase
- FUTURE
  - "There is no ONE model"
    - Subscription based (e.g. World of Warcraft)
    - Play for free, pay for stuff (e.g. GoPets)
    - Advertising supported (adver games and in-game advertising, e.g. Anarchy Online)
    - Merchandise supported (e.g. Webkins)
    - Commerce supported (e.g. Second Life)

Marketplace trends: Move outside the Silo

- **Then**
  - Successful Movies, TV shows, Toy Brands drove Game Development
- **Now**
  - Successful Games drive Movies, toys, and shows
- Future
  - Success will depend on successful cross Media/Medium rollout - every medium drives every other medium

Marketplace trends: new "players"

- Then
  - Core gamers (teen and tween boys)
- Now
  - Games trying to appeal to new markets to sustain growth
    - Women (Casual Games)
    - Minorities and Cultural Communities (not just translating a game)
    - Age groups (Wii)
- Future
  - hyper-segmented content, marketing and features
  - Trusted brands
  - "Serious" applications (simulations, training, e.g. MMOs as environments for developing leadership skills)

Marketplace trends:

Integrated cross-platform experiences, anytime, anywhere

- Then
  - –Handhelds, console, PC and online were all independent games with little cross platform development
- Now
  - –Franchises (or brands) exist upon multiple platforms and offer same feel , or similar art
- Future
  - –Integrated "experience" across multiple platforms
  - –Ubiquitous, high-bandwidth mobile access
  - –"Playing the game is creating the game" – UGC, new narrative models
  - –Games as social experiences

Technology is making everything faster, better, cheaper

- Then
  - –Clunky or complex user interfaces
  - –Slow graphics and processing power
  - –Expensive and proprietary equipment, software
- Now
  - –Breakthroughs in user-interfaces
  - –Commercial, off-the-shelf IT powering development and device
- Future
  - –Better: improved realization, simulation, quality
  - –Faster: development, processing power, bandwidth
  - –Cheaper: development, devices, economics

Marketplace trends:

- Then
  - –Games were designed for single player
  - –Multiplayer meant how many could play off same device
- Now
  - –Few Games developed are solely single player
  - –Multiplayer includes everyone logged in through same device
- Future
  - –Games as social experiences
  - –Access similar content through device I have with me now
  - –Time Invested works for me regardless of how I access

Game Access Devices

PC Sales in 2006
~230M

Mobile Phones Sales in 2006
~850M

Source: Cnet news.com

Massive Games
Need Massive Technology

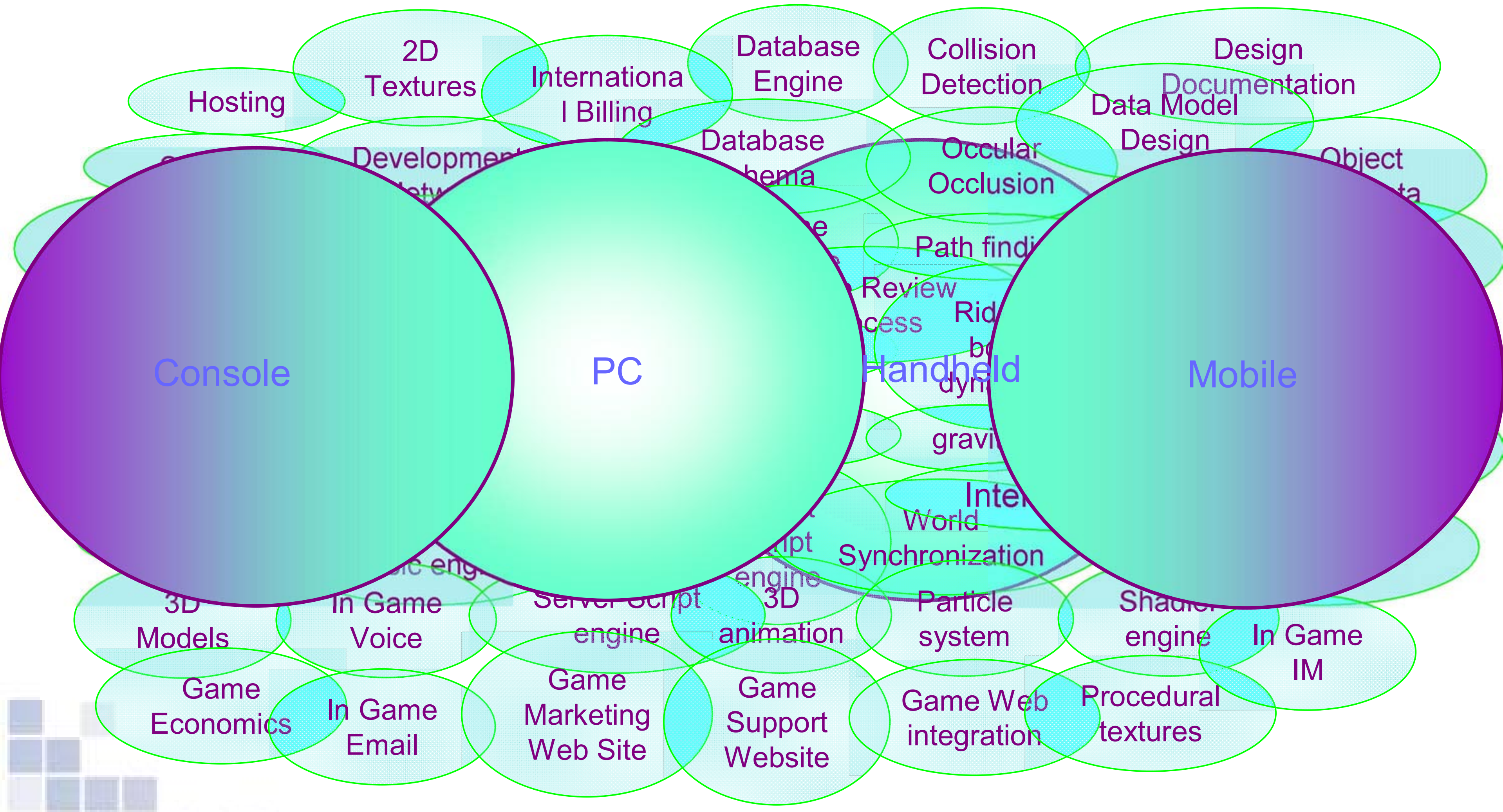
Actual Infrastructure in Use

Active Servers	~ 195
Dev Servers	~ 200
Weight	About 2.5 Metric Tons of equipment
CPUS	> 420 CPU cores > 1 THZ
RAM	> 7.5 Terabytes
Estimated FLOPS	> 7.5 Terra
Bandwidth	Total Bandwidth Estimate ~ 400 Gbs

There is a huge number of topics that have to be addressed to bring a game to market

In world Economic system
2D Textures
International Billing
Database Engine
Collision Detection
Design Documentation
Hosting
Data Model Design
Servers
Development Network
Database Schema
Occular Occlusion
Object Metadata
3D Video Card Support
Asset Management
International Taxation
Game Balance
Path finding
Cheat prevention
Abuse Prevention
Code Review Process
Audio Card Support
Art review process
Voice Talent
3D engine
Ridged body dynamics
Client Hack prevention
Billing
Multiple OS Support
2D Interface engine
Quest Engine
Music
gravity
Game Master System
Account Management
Internationalization
Scripts
Contextual Music engine
Script
Client script engine
World Synchronization
Team & Group Support
3D Models
In Game Voice
Server Script engine
3D animation
Particle system
Shadier engine
In Game IM
Game Economics
In Game Email
Game Marketing Web Site
Game Support Website
Game Web integration
Procedural textures

Most have to be addressed for each target platform individually



So Why not today ?

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