

Introduction to Game Programming

Game Genres & Game History

Concept Development

- High concept
 - Typically a single sentence description of the game that sounds interesting
 - Example:
 - Ping-Pong on the computer (Pong)
 - A street racing game where you drive a getaway car for the mob (Driver)
 - An ordinary technician battles monsters after an accident at a secret research facility (Half-Life)

Genre – Adventure Game

- Story-based game that usually relies on puzzle-solving for actions
- Can be text-based (Infocom's Zork) or graphical (Sierra's King's quest)
- Can be told from a first-person (Seventh Guest) or third person perspective (Monkey Island)
- Usually not in real time – player usually takes his time between turns – nothing happens in the game world until she/he enters her/his command
- Usually mouse-based point-and-click in which player indicates what he wants by moving the mouse on screen
- Player expects a complex world and a good story



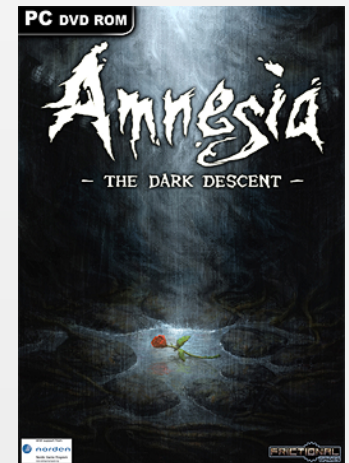
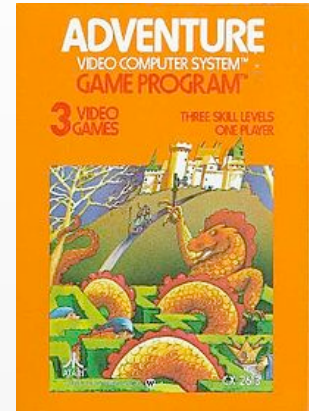
Genre – Action Game

- Real time games in which the player must react/act quickly to what's happening on the screen
- Dominated by first person shooters (FPS) such as Quake, Unreal, and Halo
- Could be third person (Tomb Raider) as well
 - In which the gamer can see the heroine or hero as she/he moves through the environment and gamers have more to do than just shoot and kill
- Opponents could be computer generated artificial intelligence (AI) or other human player over a network (local or internet)



Genre – Action/Adventure Game

- Combination of the two mentioned game types
- Typically long-term obstacles
- Games focus on exploration
- Item gathering, puzzle solving, combat are features
- Don't fit in either action or adventure category
- 79s Atari Adventure is example
- Stealth games (e.g. Amnesia) and survival horror (e.g. Resident Evil) are subtypes



Genre – Role Playing Game

- Gamer generally directs a group of heroes on a series of quests
- Gameplay revolves around gradually increasing abilities and strengths of the heroes (Ultima, Might and Magic, Final Fantasy)
- Players expect to be able to micromanage their characters, all the way down to the weapons they carry and specific armor for their bodies
- Combat is an important element by which the heroes gain strength, experience and money to buy new equipments
- Like adventure games, RPGs feature a huge world with a gradually unfolding story





Genre – Strategy Game

- Requires players to manage a limited set of resources to achieve a pre-determined goal
- Resource management frequently involves deciding which kinds of units to create and when to put them into action
 - Player has to continuously balance which kind of unit to build, how many resources to allocate towards offense and defense (Command and Conquer),...
- Usually turn-based – player may take his time to make a decision – computer reacts only when player indicates to be ready.
- Real time strategy (RTS) games set the computer AI in action without giving gamer open ended time
- AI opponents may be substituted by humans in the Internet

Genre – Simulation Game



- Simulations or sims are games that seek to emulate the real world operating conditions of complicated machinery such as jet fighters, helicopters, tanks and so on
- The more serious the simulation the higher the premium that's placed on accuracy and equipment controls
 - Players expect to spend hours learning the intricacies of the machine and expect a manual as well to help them with finer points
- Less serious sim games, known as arcade sims, have simplified controls, less to learn, and punished less often for mistakes



Genre – Sports Game

- Sports games let players participate in their favorite sports as a player or as a coach
- Must accurately reproduce the rules and strategies for the sport
- Session may over an individual match, a short series, or an entire season



Genre – Fighting Game

- Usually, two person games in which each player controls a figure on the screen using a combination of moves to attach his opponent and defend against opponents attacks
- Players expect to find a basic set of attacks and defense mechanisms and master those over time



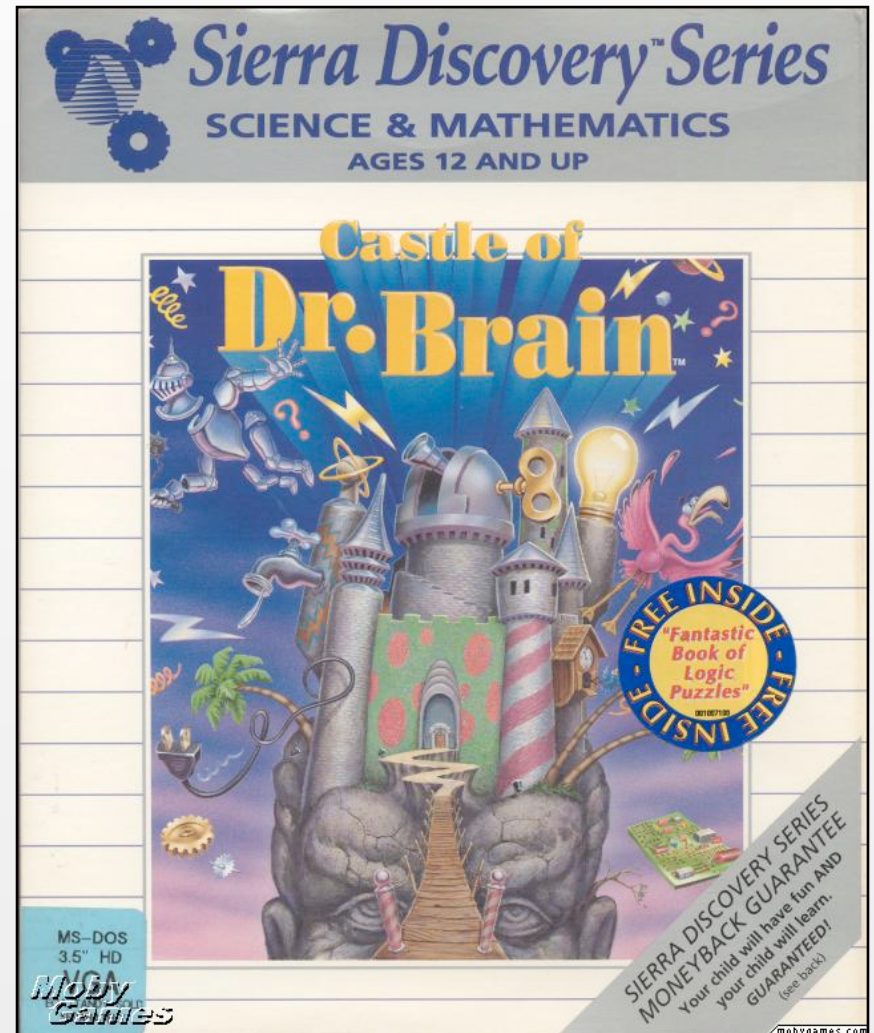
Genre – Casual Game

- Traditional games such as chess, bridge, solitaire, poker etc.
- Players generally want to drop into and out of these games quickly
- Game rules should be emulated correctly
- Simple user interface
- Little learning curve



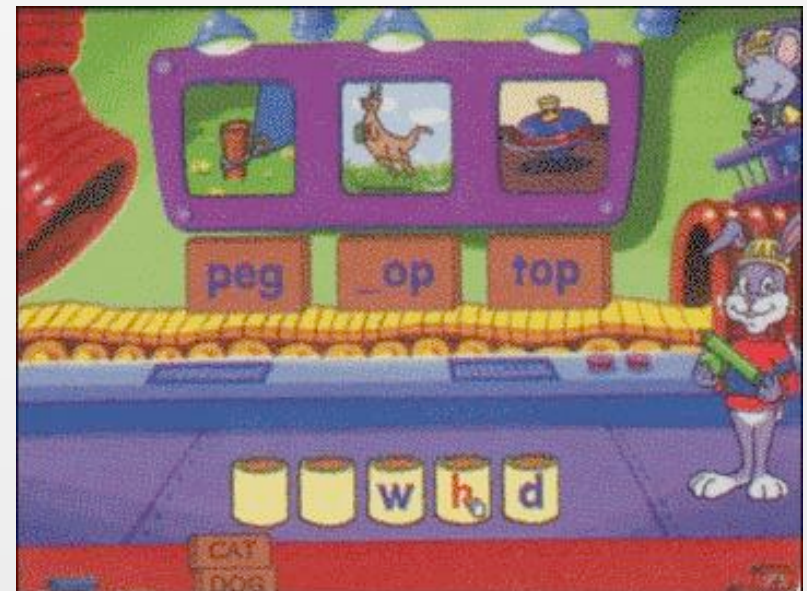
Genre – Puzzle Game

- Games for intellectual challenge of problem solving (Castle of Dr. Brain, Incredible Machine)
- Puzzles play the pivotal role and are an end in themselves (opposed to adventure games where puzzles are integrated into stories).



Genre – Education Game

- Those games that teach while they entertain (Oregon Trail, Reader Rabbit)
- Aimed at younger audience
- Designers have to work with subject experts to ensure that the content is appropriate for the target group



More Games

- **Rhythm** Games: music games, examples: DJ-Hero, Guitar-Hero, Rock band, AudioSurf, Dance Dance Revolution
- **Online** games: can include any game if it is played over a network (especially, the Internet).
- **Programming** games: player has no influence on game directly, needs to write a script/program instead.
- **Exergame**: ...get fit!
- **Gambling games**: Poker, Roulette, Blackjack, Keno,...



This might be the world's first video game



VIDEO GAME timeline

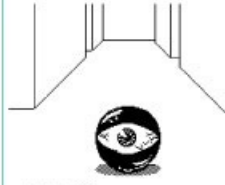
As the world of video games continue to evolve, we take a look back at popular consoles and video games that helped make Nintendo, Sony, and Microsoft the giants they are today



1972
The world's first home video game console, the Magnavox Odyssey, sold 330,000 units in it's lifetime



1974
Gran Trak 10, the first racing arcade game, is released. It is the first arcade game to use ROM.



1974
Maze Wars is released. Considered to be the earliest first person shooter.



1977
Nintendo releases Color TV Game 6, packing 6 variations of "Light Tennis" (pong)



1979
Notable Releases:
Asteroids
Lunar Lander
Monaco GP
Flight Simulator



1980
Notable Releases:
Pac-Man
Missile Command
Defender
Centipede



1981
Notable Releases:
Galaga
Donkey Kong
Frogger



1983
Nintendo releases the Family Computer console in Japan and is later released in the United State as the Nintendo Entertainment System, 62 million units sold

1984
Notable Releases:
Dragon Buster
Tetris
Balloon Fight
Gauntlet
1942
Paperboy



1986
Notable Releases:
The Legend of Zelda
Out Run
Bubble Bobble
Dragon Quest
Metroid



1988
The Sega Drive (Sega in the US) released. most successful console sold over 10 million units
Notable Releases:
Altered Be
Super Ma
3
Power Pa

1st Generation

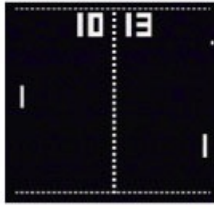
2nd Generation

3rd Generation

4th G



1967
German-born television engineer Ralph Baer and his coworkers design the first video-game console that works on a standard television and dub it, "Brown Box". They develop a chase game, allowing players to control two squares chasing each other on the screen. A modified toy gun is made and able to distinguish spots of light on the screen. 12 Other games are made



1972
One of the earliest arcade video games, PONG, is a simple tennis game that became the first commercially successful video game

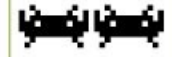


1976
Atari releases Break-out. The prototype was designed by Apple cofounders Steve Jobs and Steve Wozniak. BlackBerry's current variant is called Brick Breaker

1977
Atari releases the Video Game Computer System (Atari 2600 or UCS). It is the most successful video game console of its time



1980
Mattel releases the Intellivision video console; releasing a total of 125 games during it's lifetime



1978
Notable Releases:
Space Invaders
Space Wars
Bee Gee



1977
Atari opens the first Pizza Time Theatre (later Chuck E. Cheese's), a video arcade pizzeria



1982
Notable Releases:
Q-Bert
Tron
Megamania
Dig Dug
Pole Position
Joust



1983
Sega Releases the SG-1000 to the Japanese market finding only minor success



1985
Nintendo releases the NES in the US. Super Mario Bros. is released and sells 10 million copies before year's end; eventually being the top selling video game until 2008 with 40 million copies sold



1987
Notable Releases:
Megaman
Street Fighter
Metal Gear
Final Lap
Castlevania
Contra
Final Fantasy
Phantasy Star
Maniac Mansion

1988
Sega releases the Sega Master System as a competitor to the NES





1988

The Sega Mega Drive (Sega Genesis in the US) is released. Sega's most successful console sold 29 million units



1990

Nintendo releases the Super Famicom (SNES), the best selling console of the 16-bit era sold 49 million units

Other Releases:
Neo Geo
Game Genie
TurboExpress
Bonk's Adventure
Super Mario World
F-Zero

Notable Releases:
Altered Beast
Super Mario Bros. 3
Power Pad



1986

Notable Releases:
The Legend of Zelda
Out Run
Bubble Bobble
Dragon Quest
Metroid

1993

Notable Releases:
Ridge Racer
Star Fox
Virtua Fighter
Atari Jaguar
3DO



1994

Notable Releases:
Killer Instinct
Virtua Fighter
Earthworm Jim

1996

Nintendo releases the N64. The last significant cartridge based home console was released in colors, it sold 33 million units sold

Other Releases:
Resident Evil
Crash Bandicoot
Sega Super GT



1998
Nintendo releases the Gameboy Color

Other Releases:
Rainbow Six
Metal Gear Solid
Menogears

2000

Sony releases the PS2. 138 million units sold and is the best selling console to date



2004

Sony releases the first handheld console to use an optical disc, the Playstation Portable



2001

With their first venture into the video game console market, Microsoft releases the XBOX. 24 million units sold



2005

Microsoft releases its second console, the XBOX 360

Other Releases:
Gran Turismo 4
Guitar Hero



2009

Nintendo releases the Nintendo DSi and Sony releases the PSP Go.

4th Generation

5th Generation

6th Generation

7th Generation



1987

Notable Releases:
Megaman
Street Fighter
Metal Gear
Final Lap
Castlevania
Contra
Final Fantasy
Phantasy Star
Maniac Mansion

1991
Notable Releases:
Road Rash
Street Fighter II
Tecmo Super Bowl
Sonic the Hedgehog
Sega CD



1989
Bundled with Tetris, Nintendo releases the Game Boy and is an instant success, selling 118 million world wide

Also Released:
Power Glove
TurboGrafx-16
Prince of Persia

1992

Notable Releases:
Mortal Kombat
Virtua Racing
Kirby's Dream Land
Mario Kart
Air Combat
Philips CD-i



1995

Notable Releases:
Chrono Trigger
Time Crisis



1997

Notable Releases:
Goldeneye 007
Final Fantasy 7
Oddworld
Grand Theft Auto
Gran Turismo

1994

Sony releases the PlayStation Console and is heavily influences the end of the cartridge; 125 million units sold.

Other releases:
Sega Saturn
Neo Geo CD
Sega 32X



1999

Sega releases the Dreamcast. Considered to be ahead of its time and the pioneer of online gaming, the Dreamcast sold 10.6 million units



2001

Nintendo releases the Gameboy Advance. With several different variants and colors, 81 million are sold

Other Releases:
Paper Mario
Devil May Cry
Halo

2002

Notable Releases:
SOCOM
Animal Crossing
Kingdom Hearts
Vice City
Splinter Cell
Medal of Honor

2001

Nintendo releases the Gamecube. Nintendo's first console to use optical discs; 21 million units sold



2006

The Sony Playstation 3 and the Nintendo Wii are released just 8 days apart from each other; both enter the 3 way console war



2004
Nintendo releases the Nintendo DS sporting a touchscreen and stylus



Other Releases:
Fable
Halo 2



1986

Sega releases the Sega Master System as a competitor to the NES

Evolution of video games in past 10 years

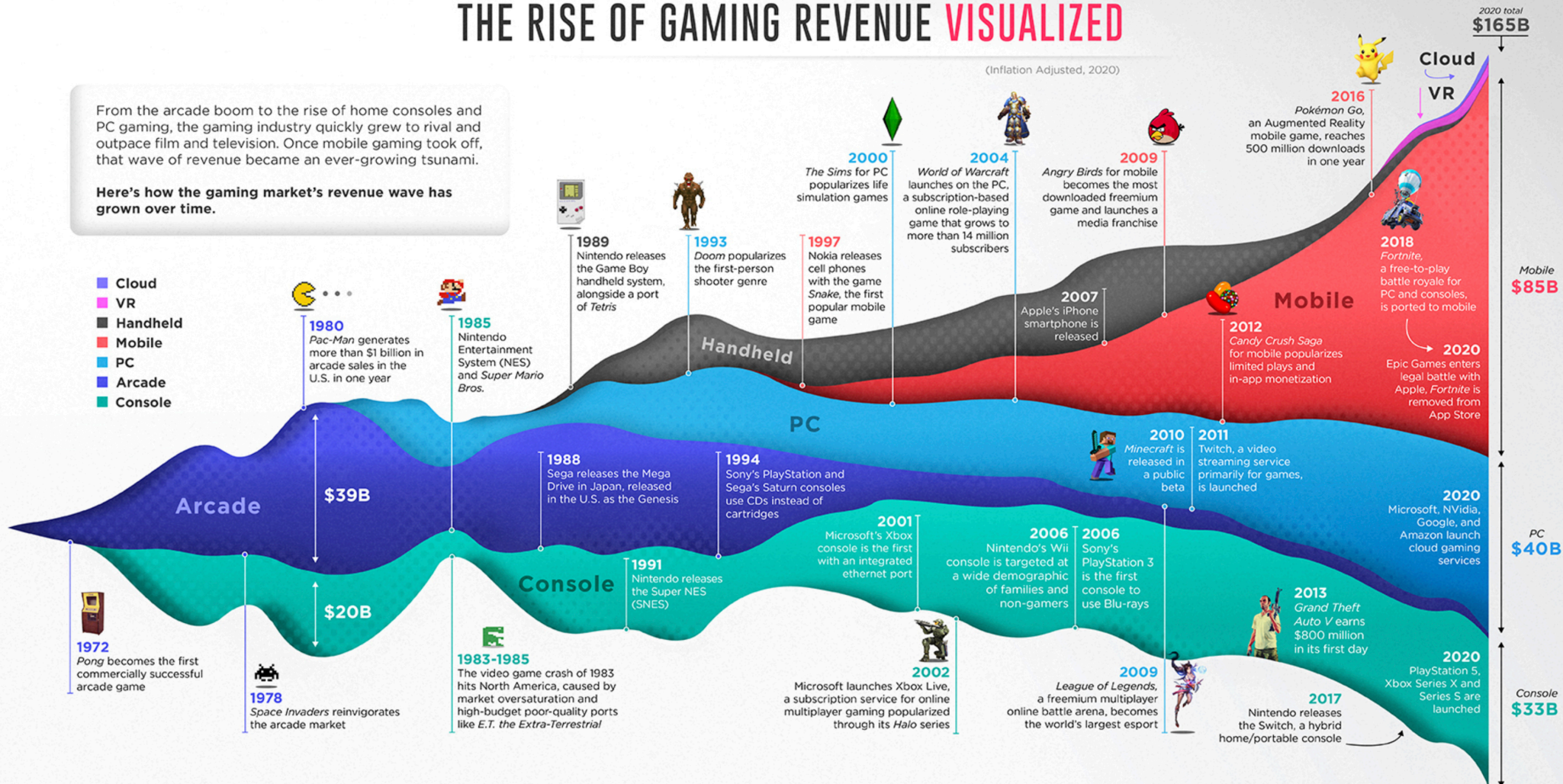


THE RISE OF GAMING REVENUE VISUALIZED

(Inflation Adjusted, 2020)

From the arcade boom to the rise of home consoles and PC gaming, the gaming industry quickly grew to rival and outpace film and television. Once mobile gaming took off, that wave of revenue became an ever-growing tsunami.

Here's how the gaming market's revenue wave has grown over time.



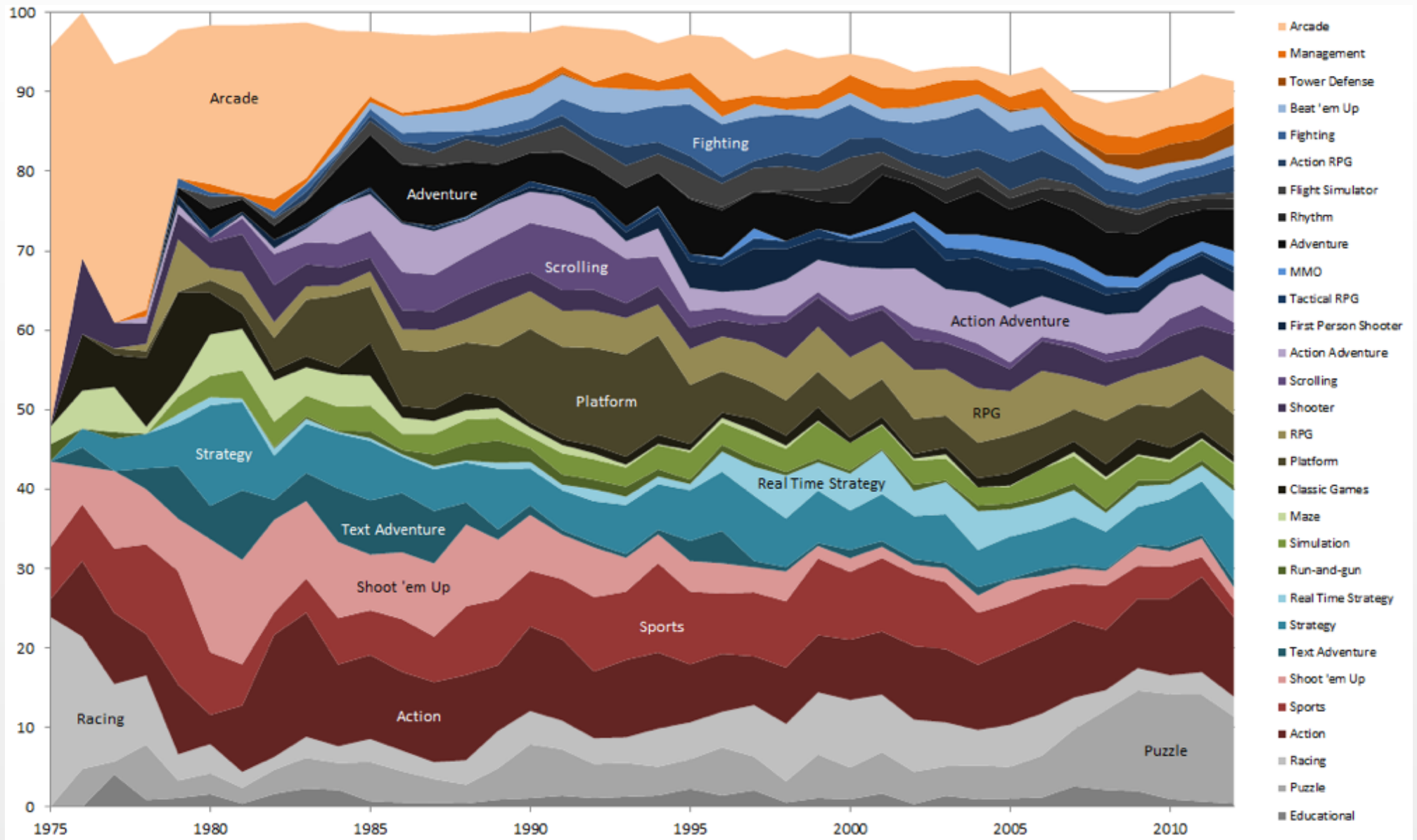
- Cloud
- VR
- Handheld
- Mobile
- PC
- Arcade
- Console

SOURCE Pelham Smithers
 COLLABORATORS RESEARCH + WRITING Omri Wallach | DESIGN + ART DIRECTION Clayton Wadsworth

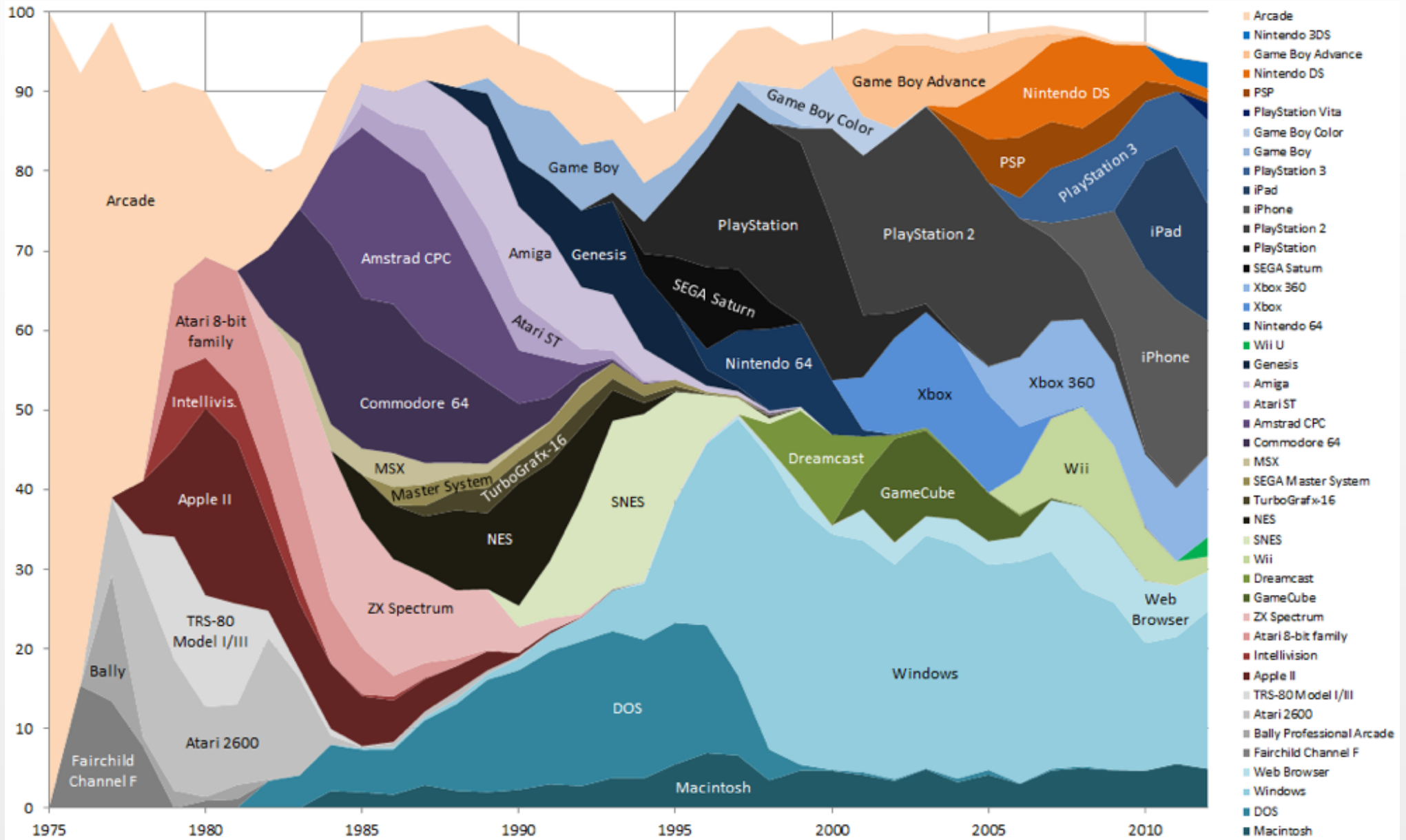


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Genres



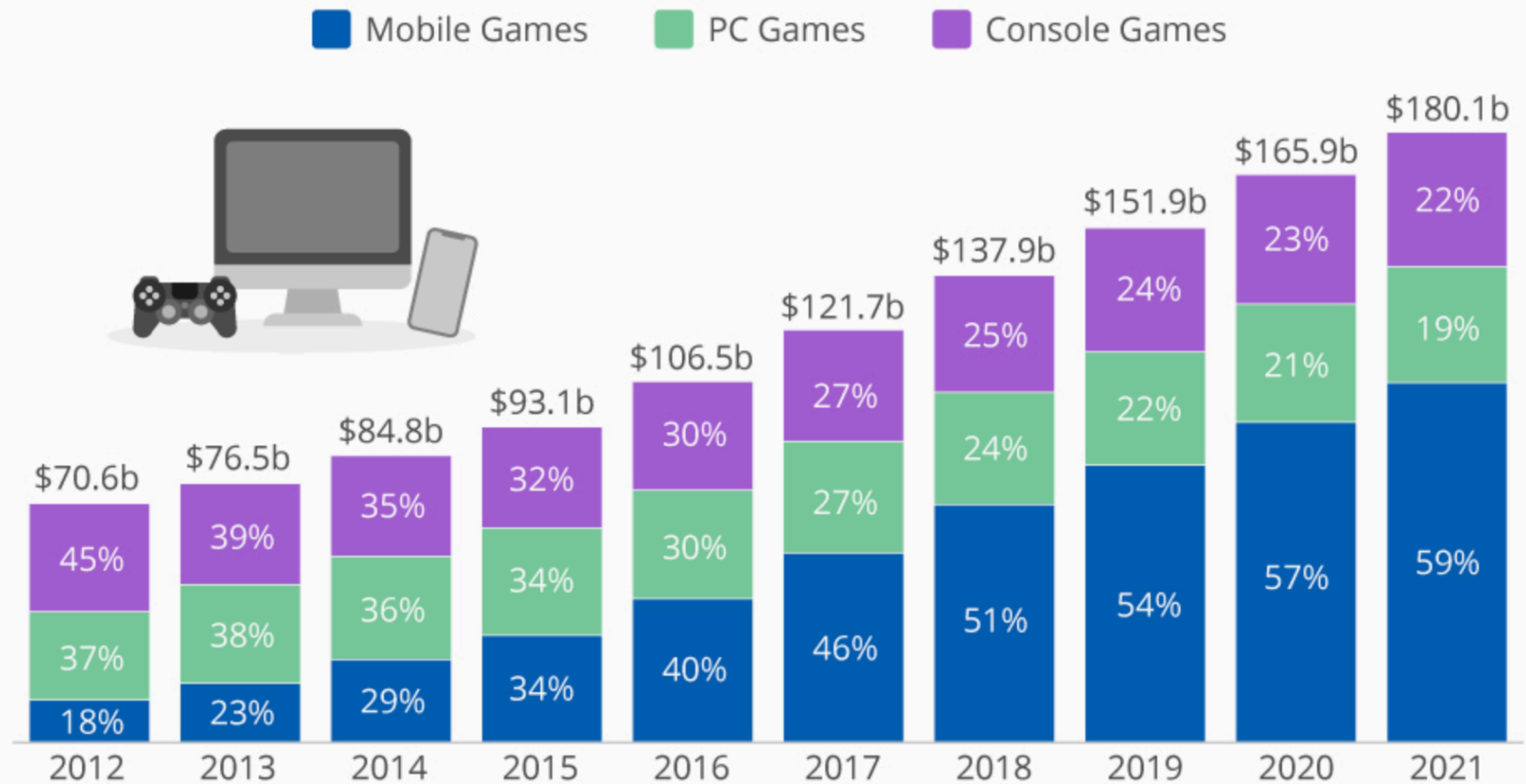
Platforms



Platforms

PCs to Become the Smallest Gaming Platform in 2018

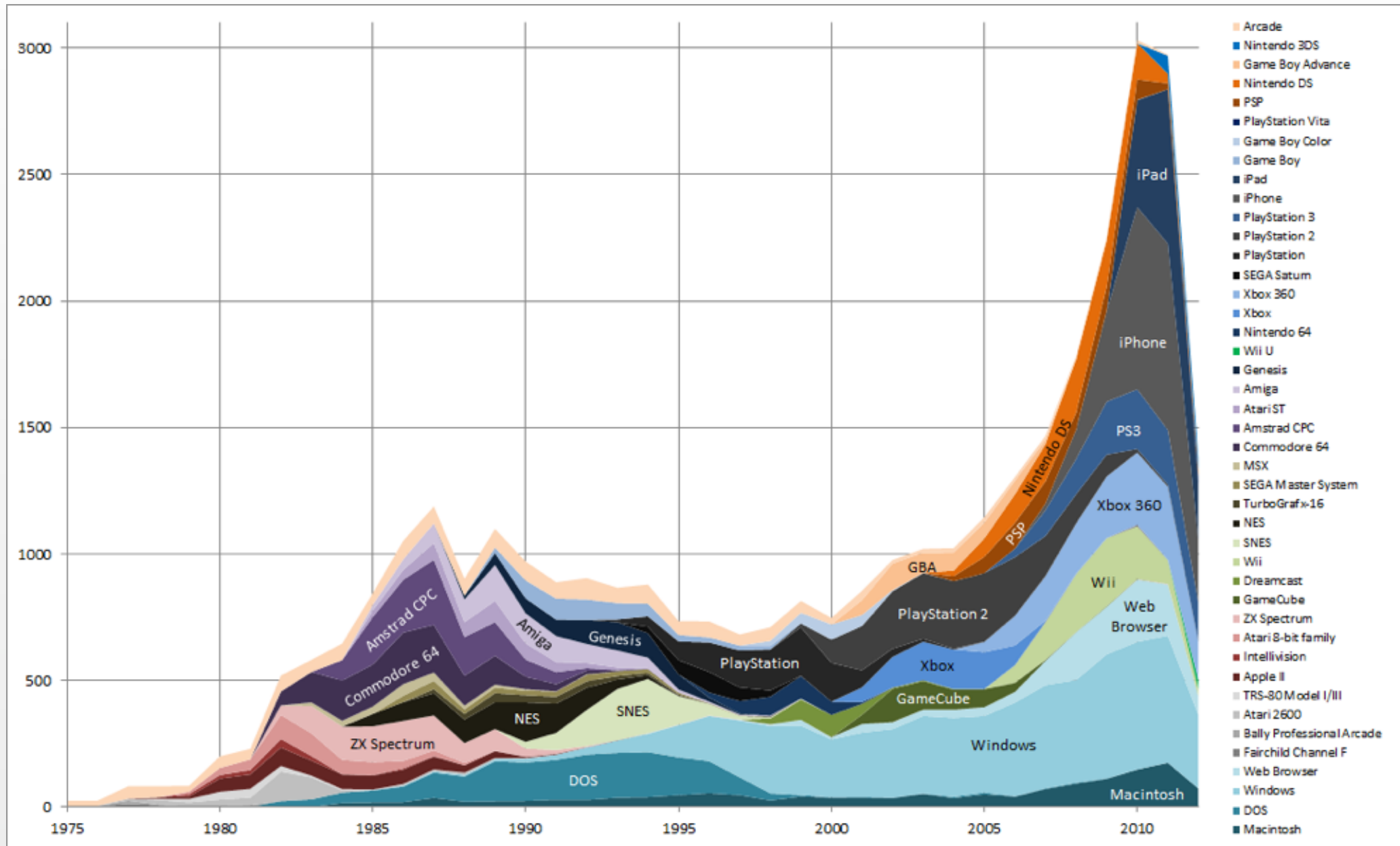
Estimated global gaming software revenue by platform



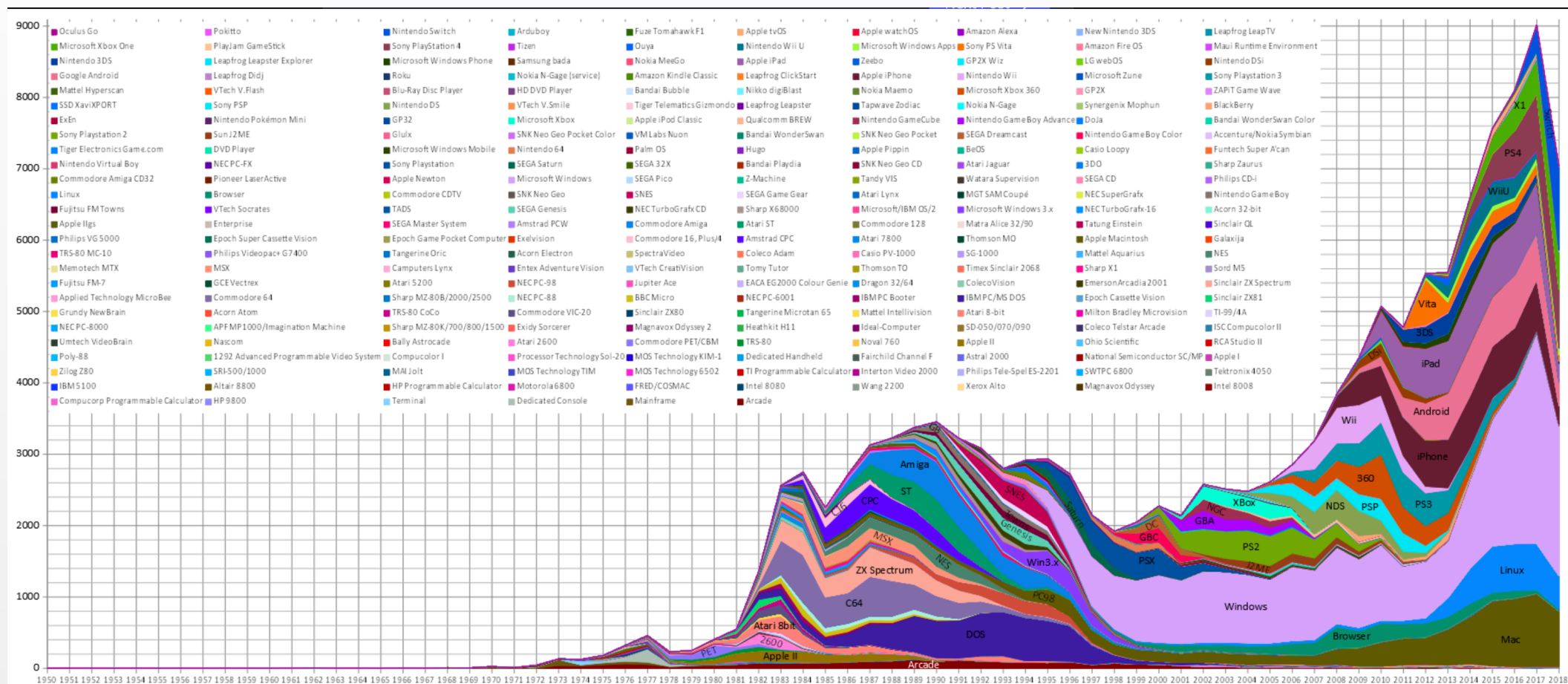
@StatistaCharts Source: Newzoo



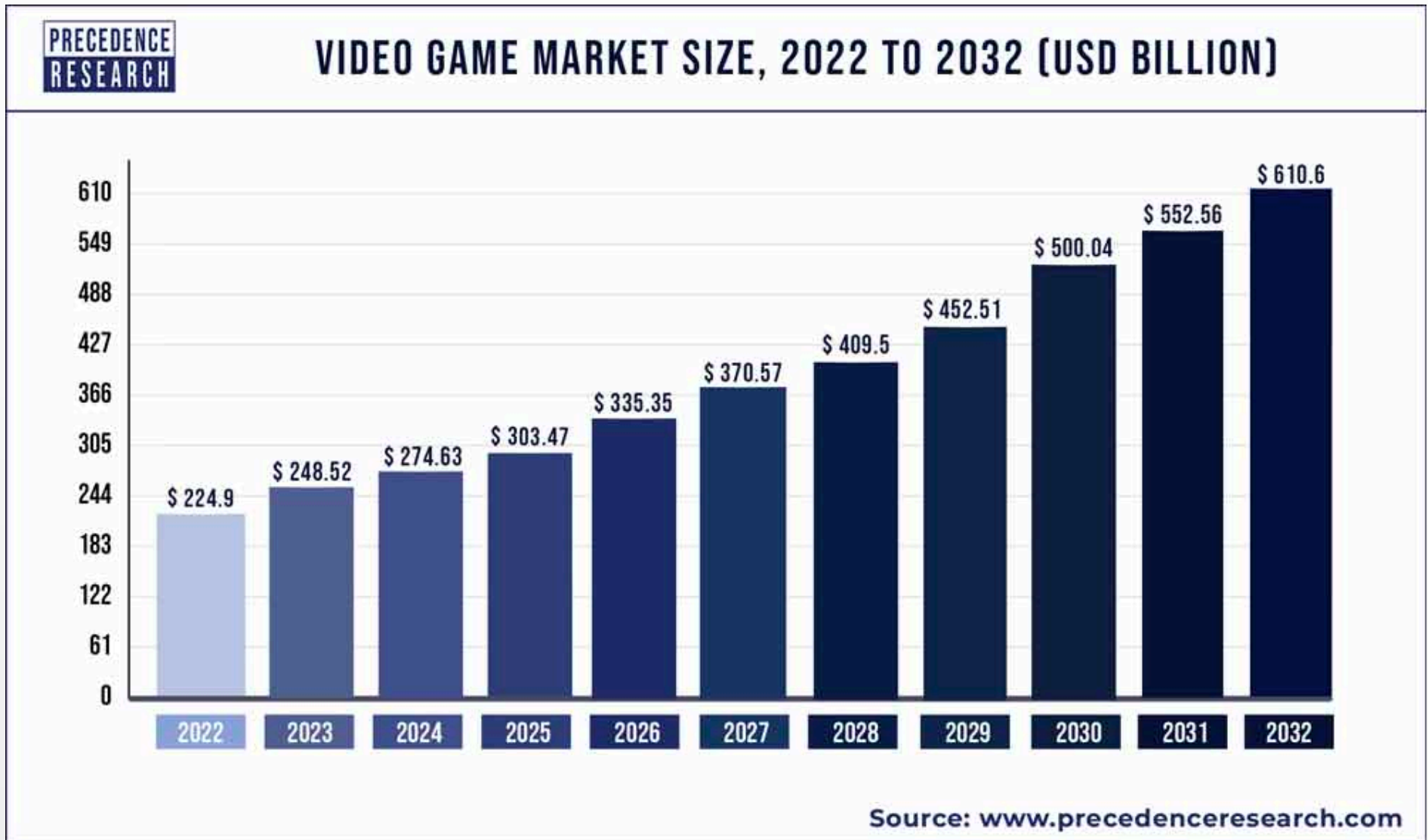
Platform release history



Video games released per year per platform



Video games released per year per platform



Game Proposal Document



Source: rohan.sdsu.edu

- High concept
- Genre
- Gameplay
 - Summarizes what the player does as she/he plays the game
- Features
 - Lists major selling points of the game (advanced graphics, new technology etc.)

... Game Proposal Document

- Setting

- Describes the game world in a few paragraphs and explains why the game is interesting

- Story

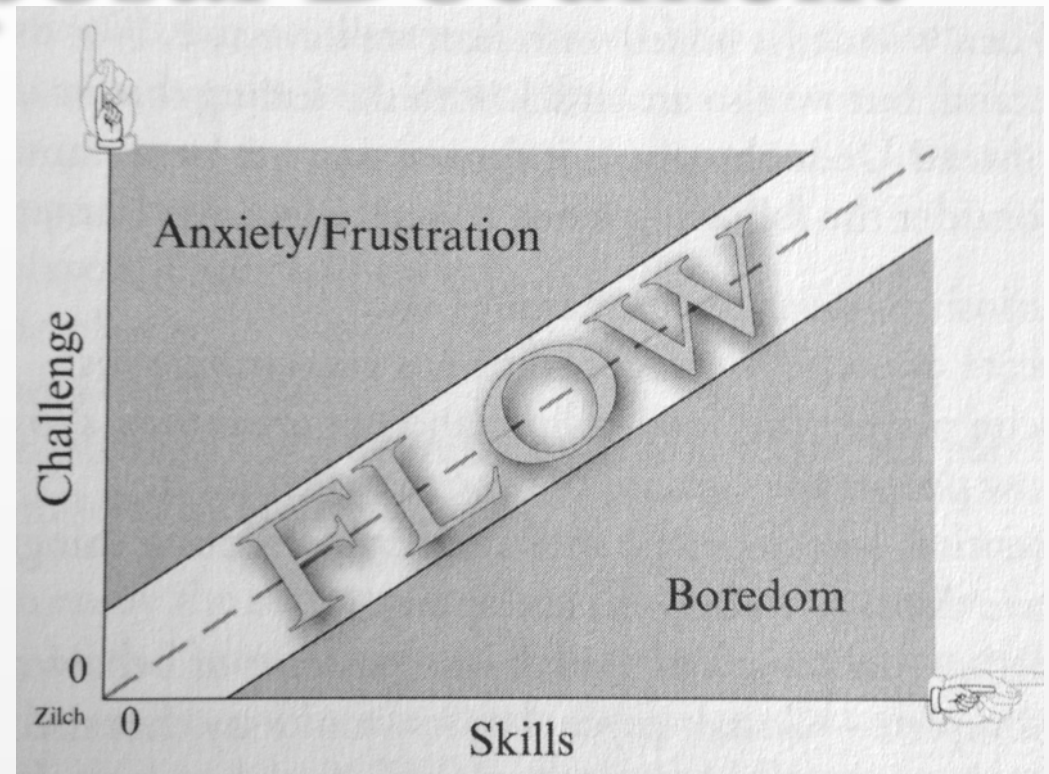
- Synopsis of the story if the game has a story

- Target audience

- For whom is the game being developed? Kids? Sports fans? Mass market? ...

- Target hardware platform

- If it's a PC game then memory, processor speed etc.



Source: Rabin (2010): Game Development

... Game Proposal Document

- Estimated schedule
- Estimated budget
- Competition analysis
- The Team (credentials of members)
- Document summary (reiterate why this will be a great game)