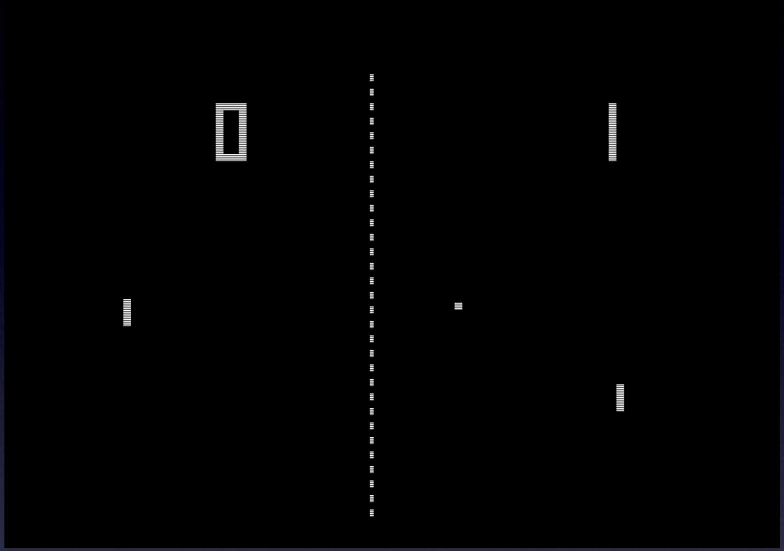
Game Industry

A (Very) Brief History

Spacewar! Courtesy of Joi Ito

- 1961 Spacewar!
  - by Steve Russell
  - on a PDP-1 at MIT
  - the first “widely” available game
- 1971 Computer Space
  - by Bushnell and Dabney
  - based on Spacewar!
  - the first mass-produced coin-op game

Pong



- 1972: Atari founded
  - by Bushnell and Dabney
  - same guys who made Computer Space
- 1972: Pong
  - released by Atari
  - the first mainstreet hit on arcade and home (1975)

1978-1982: The Golden Age

Space Invaders, Asteroids, Pac-Man, Centipede, Donkey Kong, Missile Command, Joust, Tempest, Defender

- The golden age of the arcade
  - Arcade revenues hit $8 billion pa, the most ever
  - Equivalent to $20 billion today
- Second generation consoles
  - Game on a cartridge
  - Atari 2600, aka VCS (pictured)
  - IntelliVision by Mattel
  - ColecoVision
- 1983: console crash
  - Market overcrowding
  - Poor quality games

Console Revival

- 1984 Tetris
- 1985 Third generation consoles
  - Nintendo Entertainment System
  - Sega Master System
  - D-pad
- 1989-1995 16 bit era (IV Generation)
  - SNES, Sega Genesis, Nintendo GameBoy
  - CD-ROMs, Doom, Dune II, Myst
- 1995-1999 32 bit era (V Generation)
  - Sega Saturn, Sony Playstation, N64
  - Rise and fall of 3Dfx, rise of NVidia
  - Ultima Online, Everquest, Counterstrike

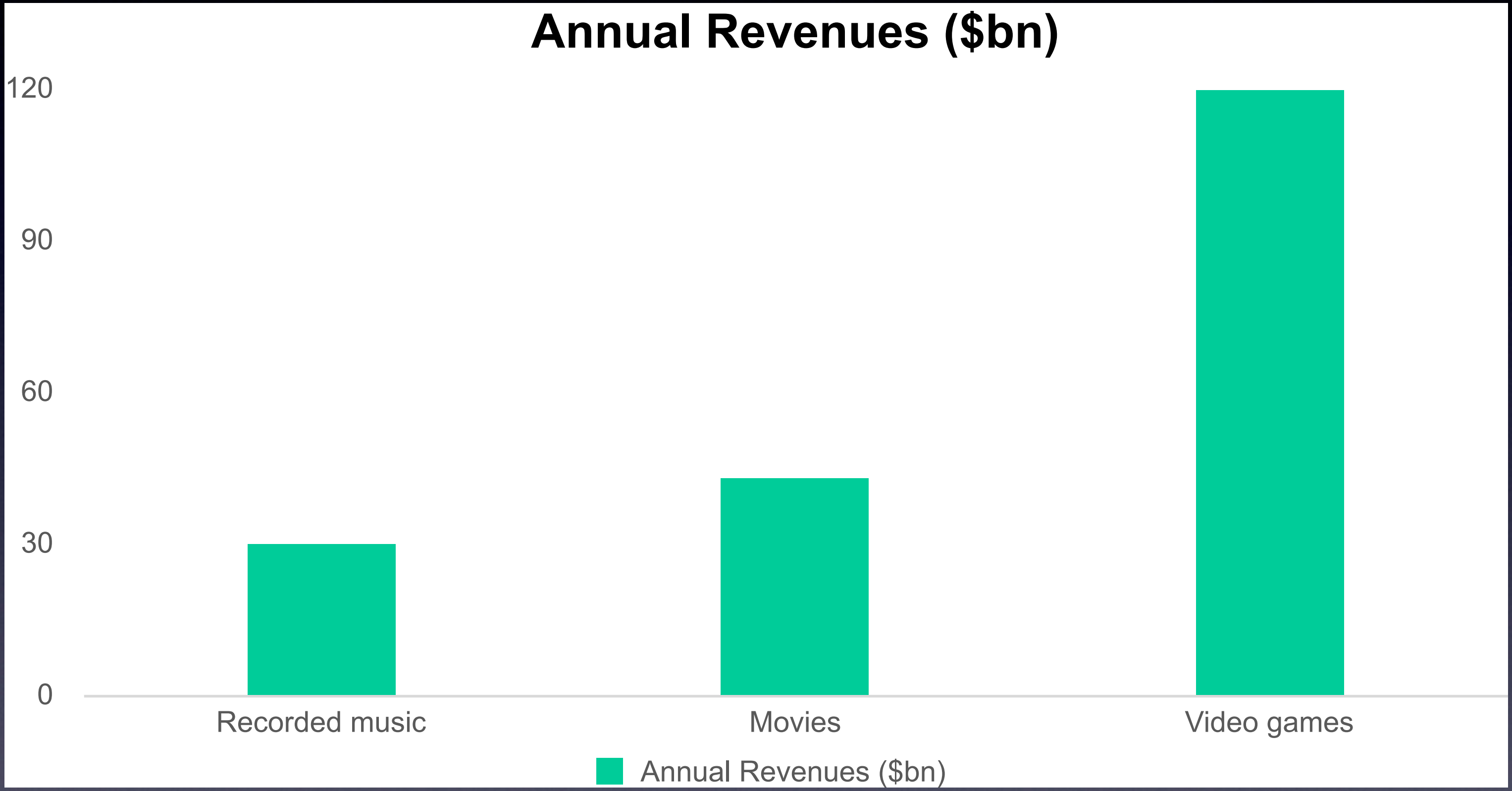
Recent History

- 2000-2005: (VI Generation)
  - PS2, Xbox, GameCube
  - Microsoft joins the race, Sega drops out
- Ubiquitous PC 3D hardware acceleration
- 2005-2013: (VII Generation)
  - PS3, Xbox 360, Wii
  - Online distribution (Xbox Live, Wii Ware, PSN Store)
- 2013-2020: (VIII Generation)
  - PS4/Pro, XBox One/OneX, Wii U, Switch
  - Increasingly longer cycles, uniform architecture
- 2020-2030? (XIX Generation)
  - SSD

Recent Trends

- Handheld
- Mobile
- Free-to-Play
- Digital distribution
- Virtual and augmented reality
- Esports
- Cloud gaming
- Game streaming
- Subscription model
- Hardware innovation
  - Accelerometers, Kinect, haptic controllers
- Game engines
- Telemetry and Analytics

Industry Size



NB, in 2020, due to covid-19 we are expected to hit $175 bn.

The Business of Making Games

- Making a game is a gamble
  - A blockbuster game costs $200+ million to make
  - Another $200+ million for marketing
  - 80% of games never make a profit
  - You need deep pockets to play these odds
- Industry ecosystem:
  - Publishing, development, distribution, hardware manufacturers
- Independent development
  - Low barrier to entry
  - Very hard to reach customers

Publishers

- Responsible for:
    - Funding game development
    - Acquiring, owning, maintaining IP licenses
    - Marketing, PR, end-user tech support
    - Sales and manufacturing of the game
- The majority of commercial games are:
    - commissioned, funded, published or distributed by the major publishers
- Most of the revenue goes to publisher
    - Remainder to console royalties, distributors
        - Sometimes a little to the developer

Developers

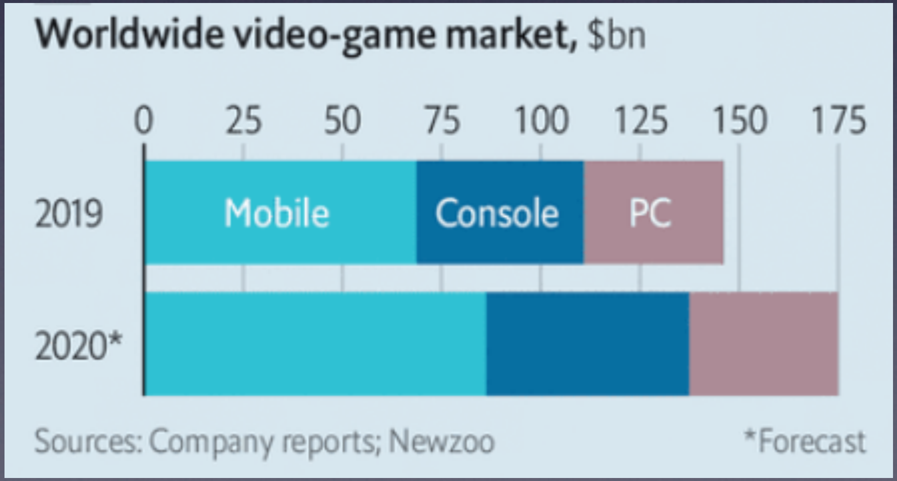
- The companies or people who create the games:
  - Programmers, artists, designers, sound engineers, musicians, producers, writers and others
- Ownership
  - Part or wholly owned by a publisher, distributor or hardware manufacturer
  - Independent (usually not for long)
- Funding
  - Most often by a publisher to develop a specific game
  - Some can and do fund projects internally
    - Which makes them publishers, really
    - Some KickStarter / IndieGoGo successes

Distributors & Retailers

- The least understood (by developers and players) yet still critical to the success of commercial games
- These companies get the games onto the shelves, also the virtual ones
- Publishers compete with each other for limited shelf space
- This is what goes on behind closed doors at trade shows like E3
- The internet and mobile are transforming this model
    - Opportunity to bypass the distributor or even the publisher
    - Publishers don’t want to upset retailers and make sure not to undercut them in digital stores
- Used games market is a huge bone of contention

Hardware Manufacturers

- PC
  - Open access: anything goes
  - Thousands of possible configurations
- Console
  - Closed access: all titles must be approved in advance
  - Fixed hardware architecture (and limited resources)
- Mobile
  - Large market, but many, many games
  - No real quality gatekeepers



Sources: Company reports; Newzoo

*Forecast

Intellectual Property

- Games based upon an existing intellectual property (IP)
  - Publisher or developer owns or has licensed rights to a movie, book, character, show, team or a previous game.
  - Often large up-front fee to acquire rights to use IP
- Brand Recognition factor to increase sales
  - Reduced marketing spend
  - Reduced risk
- Games used to be tied to other releases of the same IP (movie typically)
  - The game was often an afterthought
  - Rushed development, compromised product
  - Not good when based upon a future movie that flops
- These days game IP can stand on its own
  - E.g. Halo, Assassin's Creed or Witcher movies
  - Original IP coveted but risky

Costs, Time, Team Size

- Today's multi-platform AAA console title:
    - $200+ million (US)
        - Development budget only! Marketing is typically this much again, if not more
    - 3 - 8 years development time
    - 200+ people, often in multiple studios
- Expensive trends:
    - Open-world gameplay
    - High fidelity cinematics
    - Multiplayer gameplay
    - Licensing tie-ins
    - Fully localized content
    - Celebrity voice and mocap acting
    - Technical and creative arms race

Realities

- Games engineering is fairly ad hoc
  - Don't know how to engineer fun
  - Building a plane while flying it
    - Insufficient up-front design is prevalent
  - Iteration is key
- History of one-man-team, bedroom coding practices
  - Little formal software design
  - Little documentation
  - Mostly just coding!
  - Industry expects bedroom working hours
  - Professional management was lacking (better now, but still struggling with large teams)

Games are Different

- Games are different from application or systems software
  - At their heart, they are entertainment, not software
- This profoundly changes the overall engineering process
  - Only about 20-30% of game team members are programmers
  - 20-30% of game team members are scripters who have no programming education
  - No initial requirements remain fixed
    - You don’t know what’s fun until you see it
  - “Make it not suck now” imperative
- We still have to create complex software
  - Many classical and cutting edge software problems have to be solved to create a game
  - Only many times over!