




# Introduction to Game Development

Lecture 3






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# Turn On Tune In

What has television  
ever done for us?

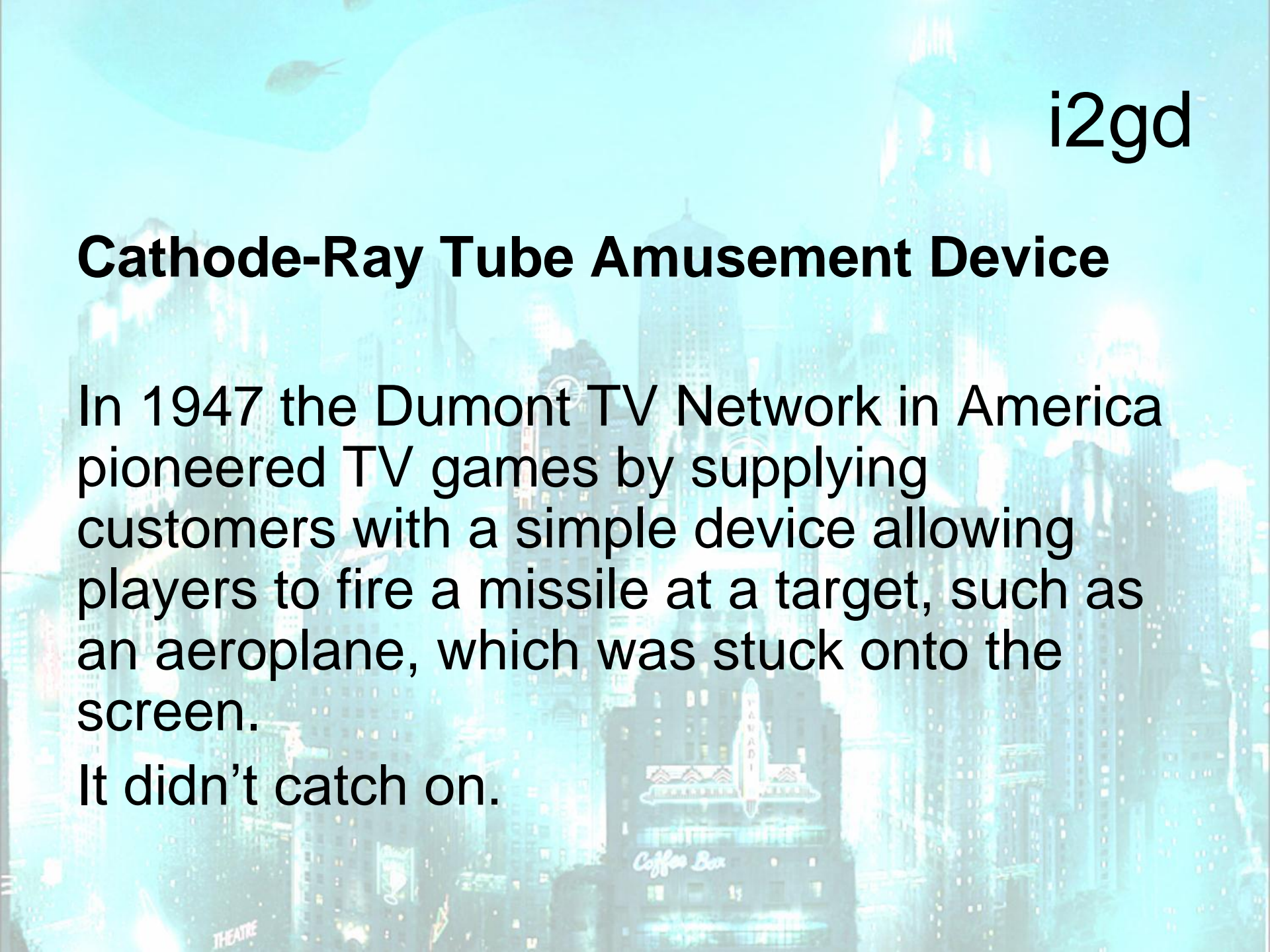


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**1960s**

Coffee Box





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## Television In the USA

- 1946 – ½% of households had a TV
- 1950 – 9% of households had a TV
- 1959 – 90% of households had a TV

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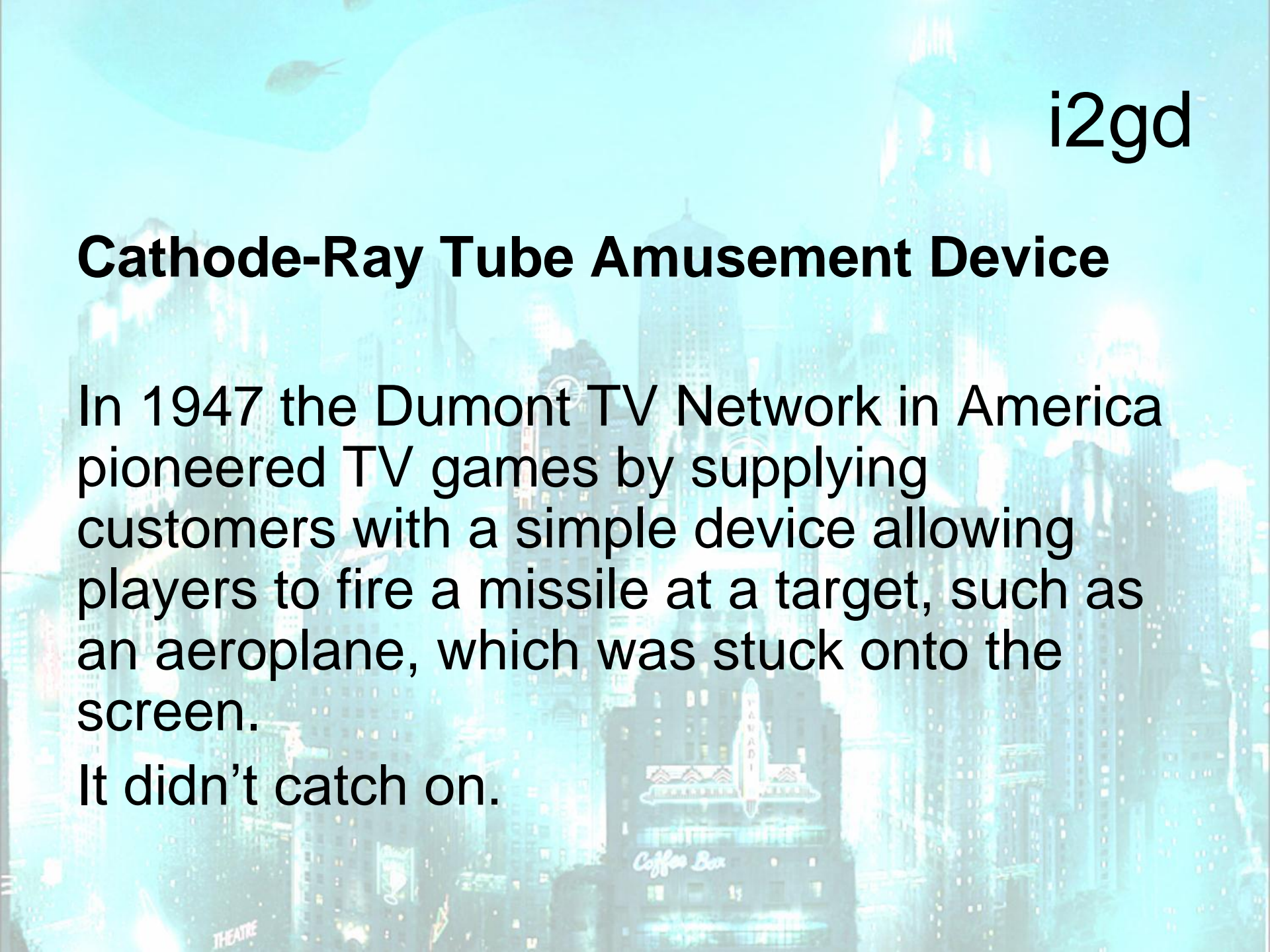


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## **Cathode-Ray Tube Amusement Device**

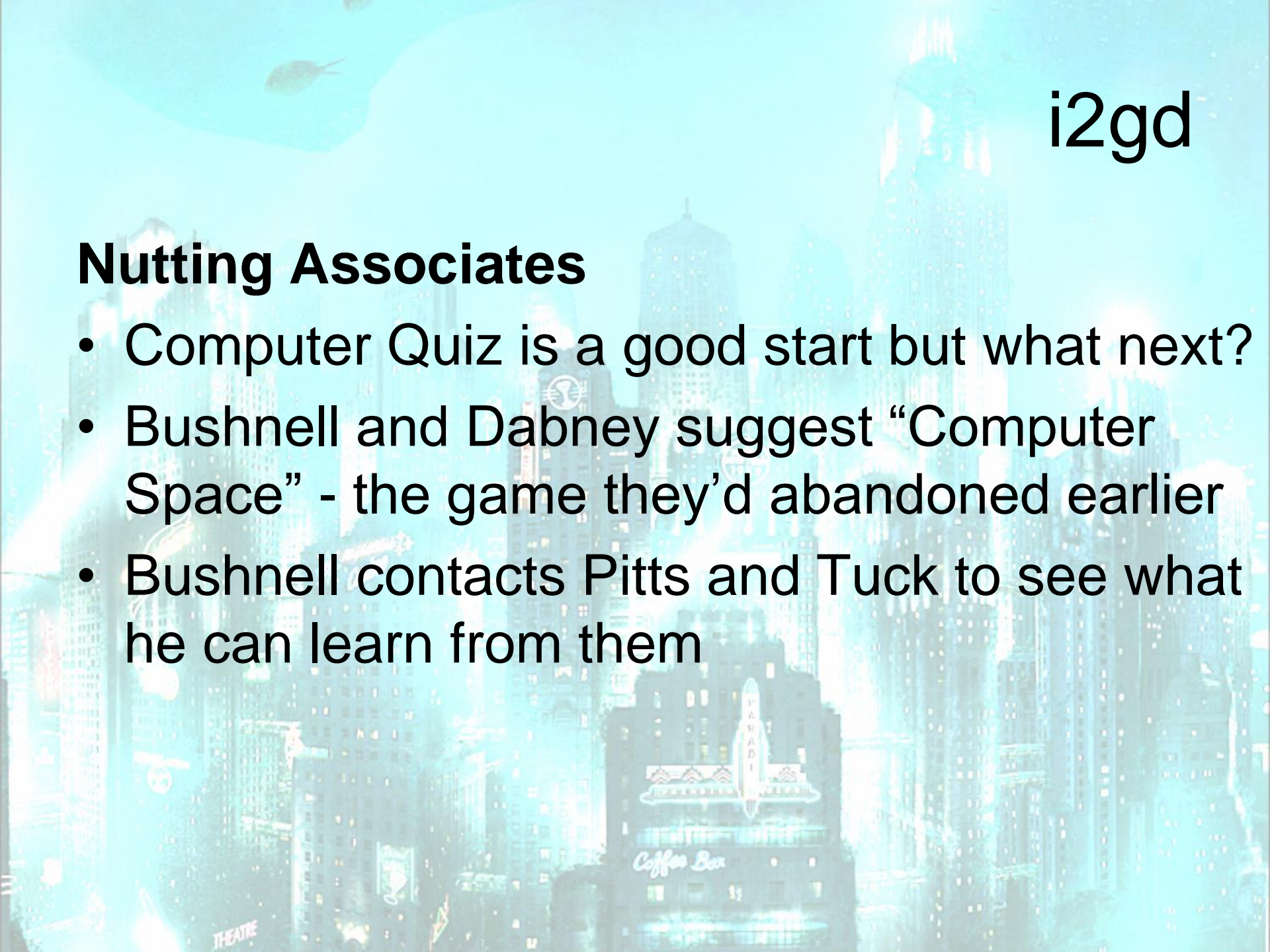
In 1947 the Dumont TV Network in America pioneered TV games by supplying customers with a simple device allowing players to fire a missile at a target, such as an aeroplane, which was stuck onto the screen.

It didn't catch on.



## 1966 – Bill Pitts

- Student at Stanford University
- Poor attendance at lectures
- Instead, uses Stanford underground tunnels to explore and illegally enter campus buildings!
- He “discovers” Stanford Artificial Intelligence Project
- PDP-6 computer with 20 terminals



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## 1966 – Bill Pitts

- Has some (little) computing experience
- Persuades Head of project to allow him access
- Abandons classes completely
- 8pm till 7am in lab every night
- His Dad warns him that he's becoming a "computer bum"



## **1966 – Bill Pitts**

- Meets Art Samuel
- Samuel has felt IBM to lecture at Stanford
- Works with Samuel on Checkers game
- Works on software to create music (later to become the basis of Yamaha keyboards)
- Works with students connecting cameras and robotic arms to computers
- More importantly – he got to play Spacewar!

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## 1966 – Bill Pitts

- Invites his friend Hugh Tuck to play Spacewar!
- Tuck suggests that if they could make a coin operated version of Spacewar! They could make a fortune
- PDP-6 is very expensive (and large) so this idea is impractical



## 1969 – PDP-11

- Digital Equipment Corporation launch PDP-11
- Cost: \$20,000
- At that price Pitts and Tuck conclude that their coin operated version of Spacewar! is viable
- Borrow money from Tuck's wealthy parents
- Create Galaxy Game – their version of Spacewar!
- 10c per game, 3 games for 25c, winner stays on
- Stanford Union agree to take it

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## Nolan Bushnell

- Discovered Spacewar! at Utah Uni in mid 60s
- Had a background in Amusement industry
- Was trying to create a coin operated version of Spacewar! on Data General Nova costing \$3995
- Working with colleague Ted Dabney
- But ... computer was far too slow
- By late 1969 they had almost given up





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**1970s**

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## **Nutting Associates**

- Bushnell leaves his job and joins Nutting Associates
- Dave Nutting had created a military training console for the US Navy
- Short film, followed by questions and cadets choose an answer by pressing a button

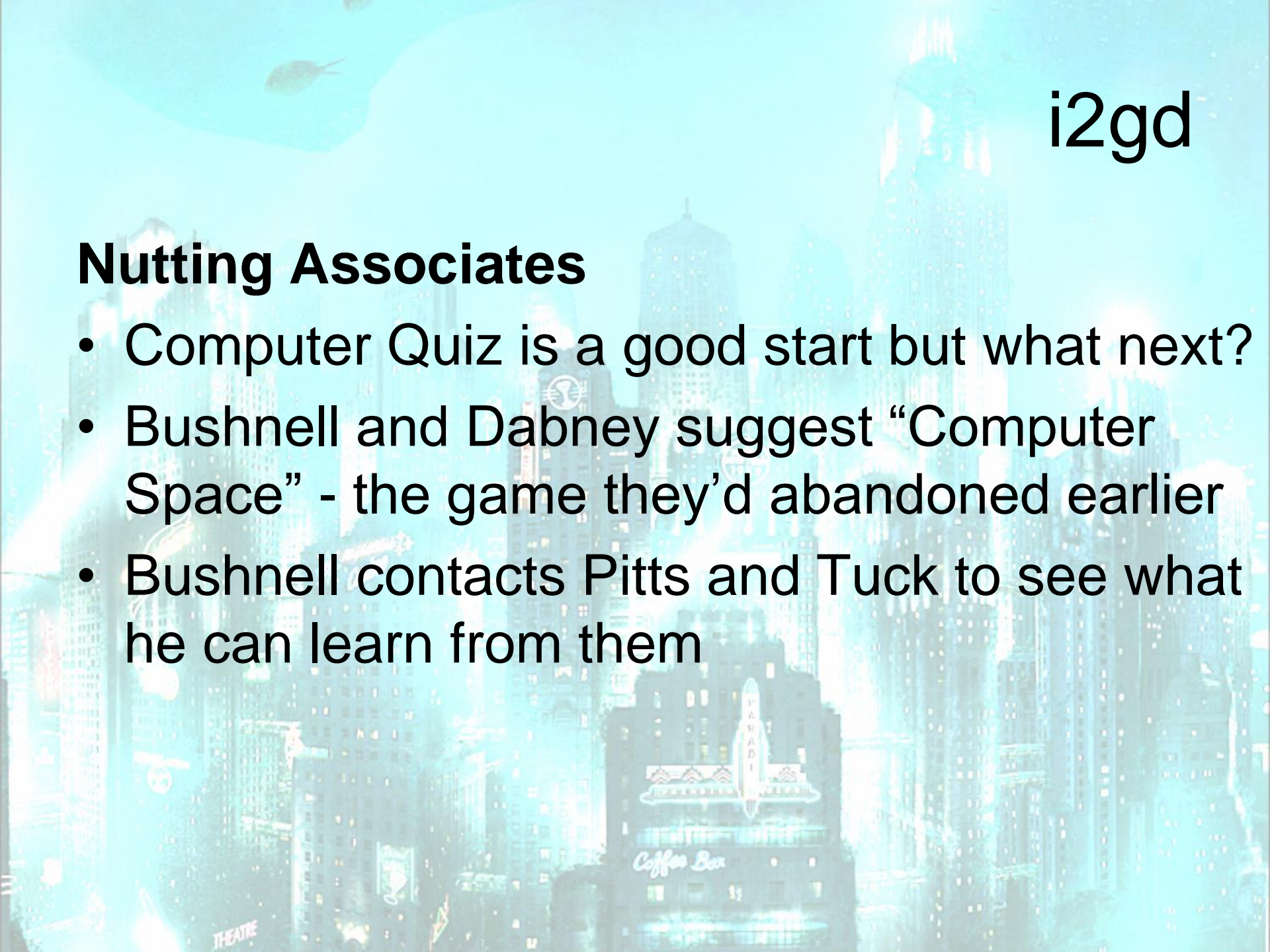


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## Nutting Associates

- Dave, and his brother Bill, add a coin operated slot and plan to put it in bars
- Game is called Computer Quiz
- Brothers fall out
- Bill makes Computer Quiz
- Dave makes IQ Computer
- Both are very successful





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## **Nutting Associates**

- Computer Quiz is a good start but what next?
- Bushnell and Dabney suggest “Computer Space” - the game they’d abandoned earlier
- Bushnell contacts Pitts and Tuck to see what he can learn from them



## **Nutting Associates**

- Pitts and Tuck had a better game
- They remained true to Spacewar!
- However they couldn't get costs down
- Bushnell could lower costs dramatically
- But he didn't have a finished game
- He was designing a new game

## **Galaxy Game by Pitts & Tuck**

- September 1971
- First coin operated video game
- Stanford University Union
- Very, very popular
- Student 10-deep around machine
- Losing money due to generous pricing (10c a game, 25c for 3 games, winner stays on for free!)
- Work begins on version 2



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## Computer Space by Bushnell

- November 1971
- Dutch Goose bar near Stanford University
- Colourful, curvy fiberglass casing
- Very popular
- Many students frequented the Dutch Goose

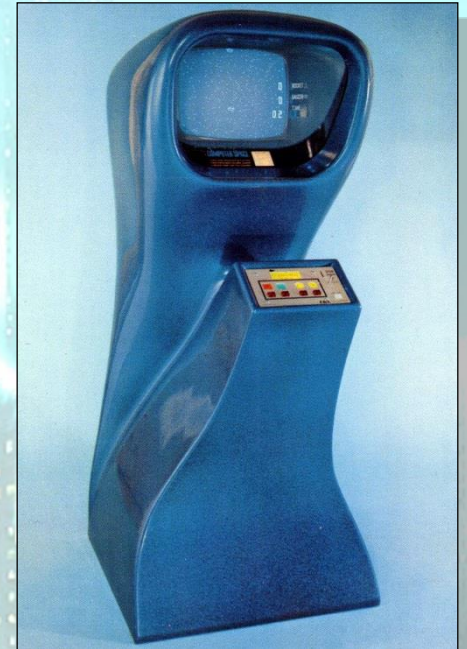




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## Computer Space by Bushnell

- Flushed with this success Nutting Associates built 1,500 units
- However, outwith student areas, the game was not popular at all.
- Considered too complex
- Couldn't compete with pinball machines





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## Computer Space by Bushnell

- However, where it was popular, it was very popular.
- Eventually made over \$1,000,000
- Encourages Bushnell to leave Nutting.
- With Dabney, he forms his own business



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## Syzygy Engineering

- Bushnell and Dabney set out to replace pinball as the mainstay of amusement arcades
- Syzygy is the term for a straight-line alignment of three celestial bodies, such as when the Earth, Moon and Sun line up during a solar eclipse.



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## Syzygy Engineering

- May 1972
- Syzygy sign a deal with Bally Midway (large pinball manufacturers)
- Video Driving game
- Bushnell and Dabney invest \$250 each to register company

The Bally MIDWAY logo is displayed within a red rectangular box. The word "Bally" is written in a white, cursive script, and "MIDWAY" is in a white, bold, sans-serif font. The background of the slide features a stylized, blue-toned cityscape with various buildings and signs, including one that says "Coffee Bar".

*Bally* **MIDWAY**

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## Syzygy Engineering

- They discover that the name is already being used
- Bushnell turned to his favourite game for inspiration - the Japanese board game Go
- He used a term similar to check in chess
- 27<sup>th</sup> June 1972 he called the company ...





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ATARI





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## Atari

- On the same day they hired Al Alcorn
- Alcorn was a trainee
- Very busy time for Bushnell and Dabney
- Told Alcorn they had a deal for a Ping-pong style game (similar to Ralph Baer's)
- No such deal existed
- Just giving Alcorn something harmless to cut his teeth on!





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## Atari

- Alcorn attacked the job with enthusiasm
- He added scores
- He added sound effects
- He made the ball bounce at a different angle depending on where the ball hit the bat
- He had difficulty getting Bushnell or Dabney to look at the game



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## Atari

- “Avoid missing the ball for high score”
- When B & D eventually looked at it, they loved it (they would stay for a couple of hours after work each night playing it!!)
- Alcorn had made it FUN
- They called it Pong



# ATARI

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## Pong

- Trialled it in Andy Capp's Bar in California
- Bushnell demoed it to Bally Midway
- Bally Midway didn't want it
- Machine had broken down in Andy Capp's
- Alcorn was sent to sort it out

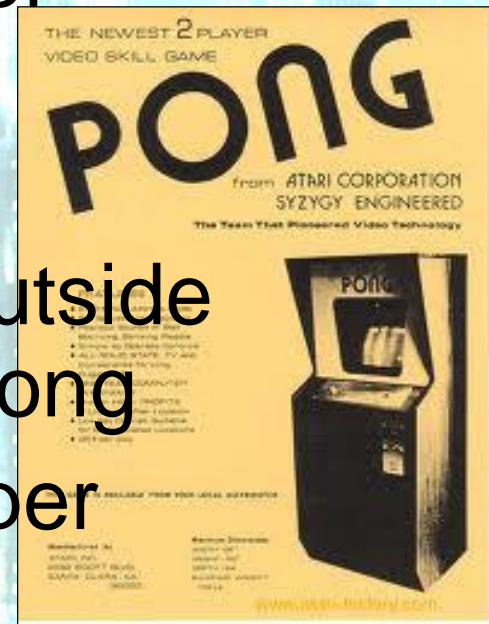


# ATARI

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## Pong

- Alcorn opened machine to investigate
- Coins spilled out all over the floor
- The sheer number of coins had jammed the machine
- Customers had been queuing outside waiting for bar to open to play Pong
- Average coin-op machine: \$50 per week
- Pong: \$200 per week







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## Atari

- Bushnell offers game to Bally Midway again
- BM still reject it
- Bushnell offers games to Nutting Associates
- NA reject it
- Out of options, Bushnell gambled everything Atari had on making the game themselves

# ATARI

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## Atari

- Used all their capital to build 11 Pong machines
- Sold all 11 machine immediately
- Cost: \$280 each
- Sold: £900 each
- Used all the money to build 50 machines







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## Atari

- Running out of space
- Knocked a hole in the wall through to an empty unit next door
- Could not satisfy demand for machine
- Atari needed a capital injection
- Banks not interested because of the dubious reputation of slot machines (links to Mafia)



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## Atari

- On the back of an order for 150 machines, one bank lends \$50,000
- Barely enough to start production
- Production starts in an abandoned skating rink
- Pong takes the US by storm
- Competitors start making thinly veiled clones
- Sales of Ralph Baer's Ping-pong rocket too





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## Atari

- Magnavox, who made Ralph Baer's Ping-pong, sue Atari for copyright infringement
- Magnavox relents, feeling Atari was too small to sue
- Settled on one-of payment of \$700,000
- Magnavox sued other companies, including Bally Midway and Nutting Associates.



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## Atari

- By September 1974 the US had 100,000 coin-op video games
- Generates \$250,000,000 per year
- Completely changed view of Amusement Arcades
- Now attract young people



The Atari logo is displayed in white capital letters on a red rectangular background. The background of the entire slide is a stylized, cyan-colored illustration of a city skyline with various skyscrapers and neon signs.

ATARI

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**Atari**

The problem for Bushnell was

**What next??**



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## Working Practices at Atari

- Based on fun and creativity
- No fixed working hours
- No dress code
- Parties with free beer if targets were met
- Had beer kegs out back as targets were being met so often!
- Blind eye turned to use of drugs







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## Working Practices at Atari

- However
  - Staff worked hard
  - Put in long hours
  - Worked 24 hours when needed
- Helped Atari stay ahead of competition
- More than 15 companies now made games very similar to Pong



# ATARI

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## New Atari Games

- Space Race
  - Steer through meteor storms against the clock





# ATARI

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## New Atari Games

- Gotcha
  - Al Alcorn
  - Virtual kiss-chase game in a maze
  - Joysticks shaped like breasts



# ATARI

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## New Atari Games

- Qwak
  - Duck hunt with rifle-shaped light gun



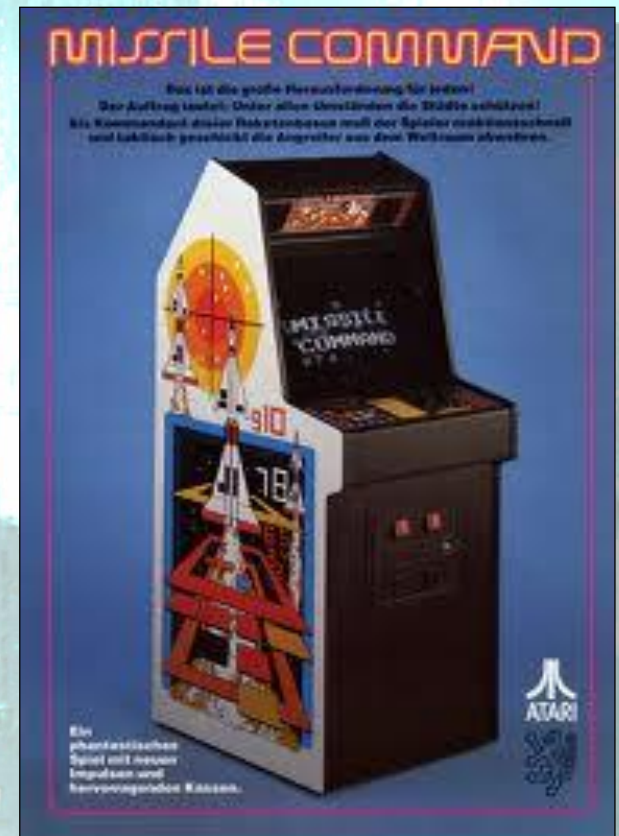




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## New Atari Games

- Missile Command
  - Shoot down incoming missiles
  - Reworked version of Nutting Associates' Missile Radar



# ATARI

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## Atari Gran Trak 10

- March 1974
- First driving Game
- Bird's eye view of race track
- Uses steering wheel, gear stick, and accelerator and brake pedals





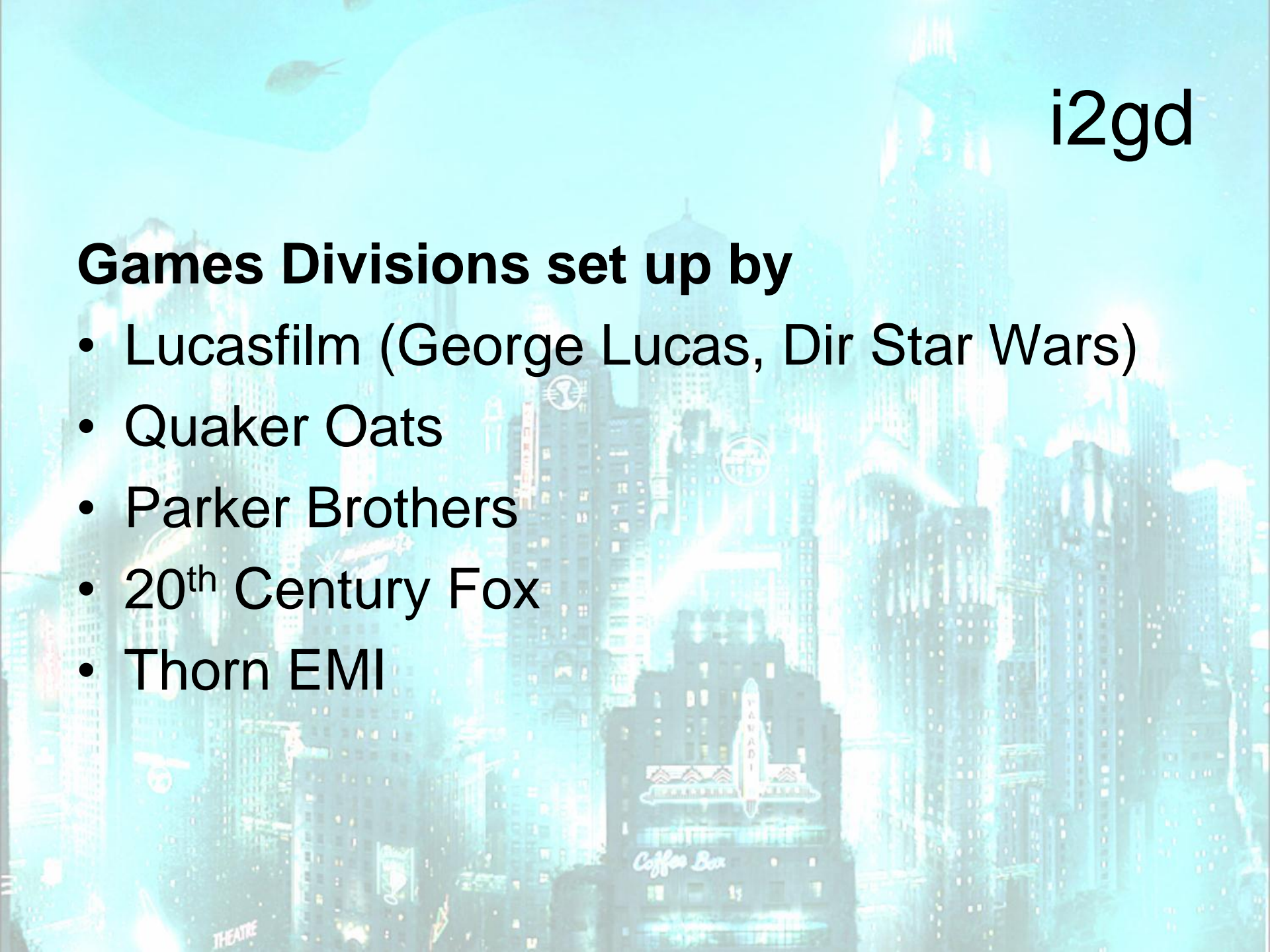
# ATARI

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## Atari Gran Trak 10

- Biggest selling game since Pong
- Accidentally underpriced - very nearly bankrupted the company!!!
- Lost money on every machine sold





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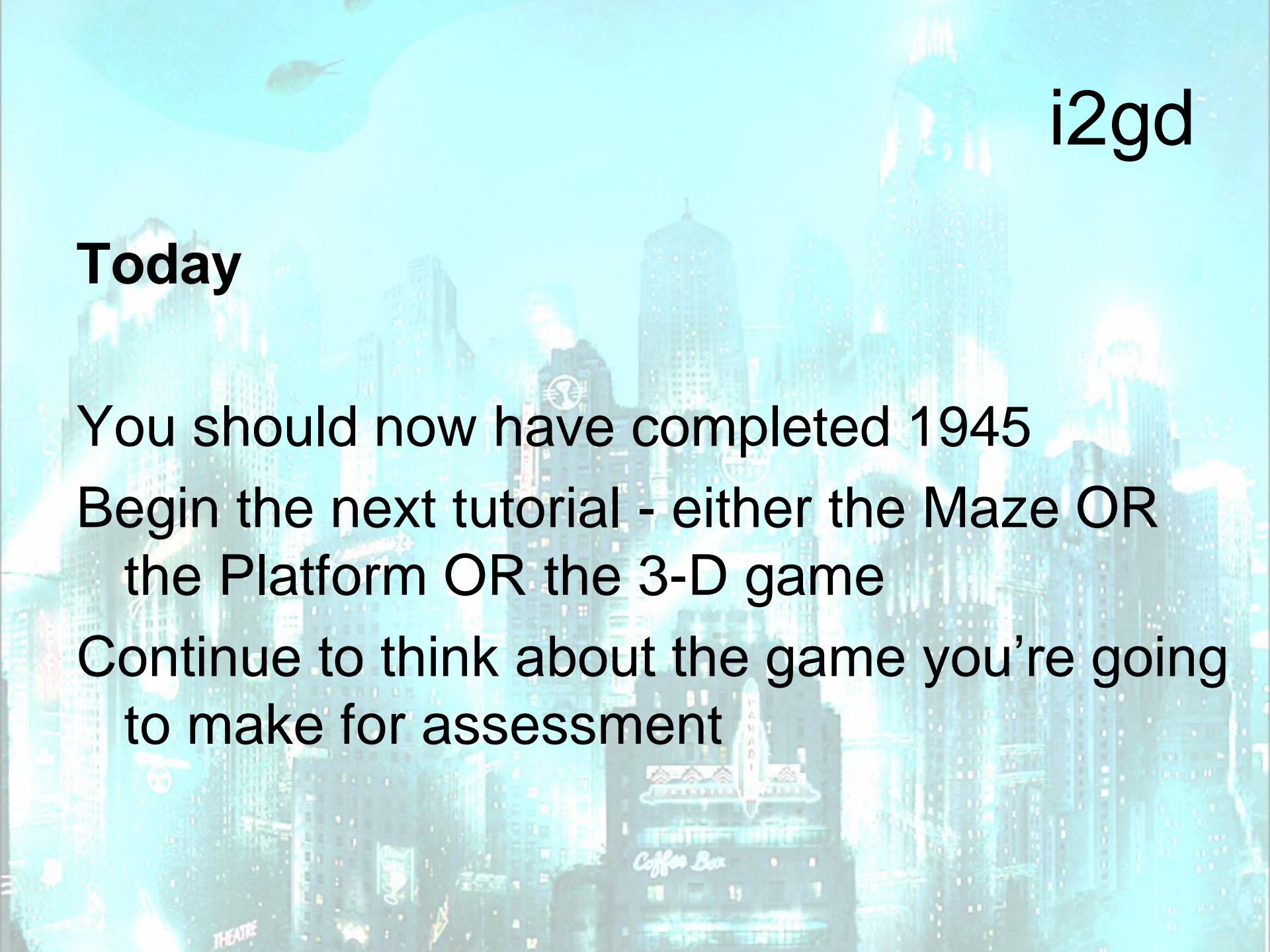
## Next Lecture

The continuing rise of Atari

Plus a look at what the competition were doing

We'll also look at the Design Document for  
Assessment 1





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## Today

You should now have completed 1945

Begin the next tutorial - either the Maze OR  
the Platform OR the 3-D game

Continue to think about the game you're going  
to make for assessment