Opportunities for Storage in the Growing Global Markets for Video Games

John Carlsen
Syncopated Systems
Opportunities for Storage in the Growing Global Markets for Video Games

Agenda

● Why talk about video games?
● Overview of historical trends
● Summary
● Q&A
Why talk about video games?

- Playing games is fun.
  (Though making games is real work.)
- Big money, steady growth
- Opportunity through unmet need
Opportunities for Storage in the Growing Global Markets for Video Games

How big is the market?
Opportunities for Storage in the Growing Global Markets for Video Games

Annual Sales (MM USD)
Key Ideas

- Digital storage is the canvas upon which game developers paint.
- In Silicon Valley, we are in the business of selling the future.
- “I know of no way of judging the future but by the past.” – Patrick Henry, 1775
A Quick History of Video Games

- 1921-1929: Philo T. and Elma Gardner "Pem" Farnsworth invent electronic television
  - 1927: Patent issued while based in San Francisco
- 1958-1959: William Higinbotham creates oscilloscope-based game Tennis for Two
  - Interesting, though few owned oscilloscopes
Opportunities for Storage in the Growing Global Markets for Video Games

~ A Vignette, About 50 Years Ago ~
50 Years Ago (1996 interview about 1969):

- Interviewer: The image dissector was used to send shots back from the moon to earth.
- Elma Farnsworth: Right.
- Interviewer: What did Phil think of that?
- Elma Farnsworth: We were watching it, and, when Neil Armstrong landed on the moon, Phil turned to me and said, "Pem, this has made it all worthwhile." Before then, he wasn't too sure.
Opportunities for Storage in the Growing Global Markets for Video Games

A Quick History of Video Games – 1970s:

• Ralph Baer invents video games
  – Creates Magnavox Odyssey using discrete logic

• Atari sees it and makes coin-operated Pong
  – Also using discrete logic
  – Made ASIC for Home Pong
A Quick History of Video Games – 1970s:

- Microprocessors invented (4-bit i4004; 8-bit i8008, F8, MC6800, MCS6501, MCS6502)
- Games distributed on ROM cartridges
  - Also on audio cassette tapes and 5¼” floppy disks, if you could afford RAM to load programs into
- 16-bit CP1600 in Mattel Intellivision
A Quick History of Video Games – 1980s:

• RAM gets cheap (so do floppy disks)
• 1983 North American Video Game Crash
• Games still distributed on ROM cartridges
  – Also on 5¼” and 3½” disks, though you quickly needed a hard disk drive to load programs into
• 16-bit MC68000 in Sega Genesis
A Quick History of Video Games – 1990s:

- **Nintendo**
  - Partners with Sony for Super Nintendo
  - Partners with Silicon Graphics for Nintendo 64
  - Makes first coin-operated game with a hard disk
- **Sony PlayStation** makes CD-ROM affordable
A Quick History of Video Games – 2000s:

● Microsoft Xbox
● Optical Discs Get More Density and Layers
● HDDs Enable Network Downloads
● Nintendo adopts MEMS, releases Wii
  - Keeps it simple, takes 50% market share
A Quick History of Video Games – 2010s:

• More of same
• Nintendo Switch
What does history teach us?
The costs of developing for new media:

- **Super Nintendo programming tool**
  - $60k in 1990, $15k in 1991

- **CD-ROM mastering tool**: $25k in 1991

- **Nintendo 64 programming tool (SGI Onyx)**:
  - $100k+ in 1995 (plus building wiring)
Network-based delivery doesn’t keep up
Opportunities for Storage in the Growing Global Markets for Video Games

Size of Distribution Media by Year

- Atari
- Nintendo
- Sega
- Sony
- Other Consoles
- Computers
Summary

• More media = more game
• If using ROM, need to emulate in situ
Opportunities for Storage in the Growing Global Markets for Video Games

Questions and discussion?
Thank you

John Carlsen <jcarlsen@syncopate.us>
Syncopated Systems
Sunnyvale, CA
www.syncopate.us