

Evolução Gráfica dos Jogos Eletrônicos

Jecel Mattos de Assumpção Jr



Seminários III



9 de Maio de 2012

Computação Gráfica

Jogos

Cinema

CAD

Interface

Computação Gráfica

Jogos

Cinema

CAD

Interface

Rápido

Tempo de Resposta

Lento

Computação Gráfica

\$\$\$

Jogos

Interface

Cinema

CAD

Rápido

Tempo de Resposta

Lento

Computação Gráfica

Simulação
\$\$\$
(militar)

Cinema

Fliperama CAD
Interface

Caseiros

Rápido

Tempo de Resposta

Lento

Computação Gráfica

Simulação
\$(mil)\$(militar)

Cinema

Fliperama

Interface
CAD
(laboratório)

Caseiros

Interface
(campo)

Rápido

Tempo de Resposta

Lento

1958 – Tennis for Two de William
Higinbotham (Brookhaven National
Laboratory)

1962 – Sketchpad de Ivan Sutherland

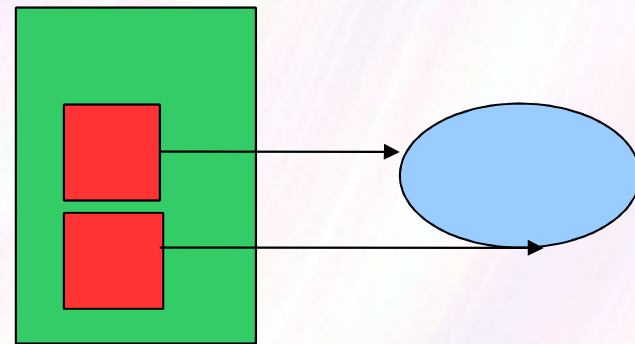


1962 – SpaceWar! de Steve Russell

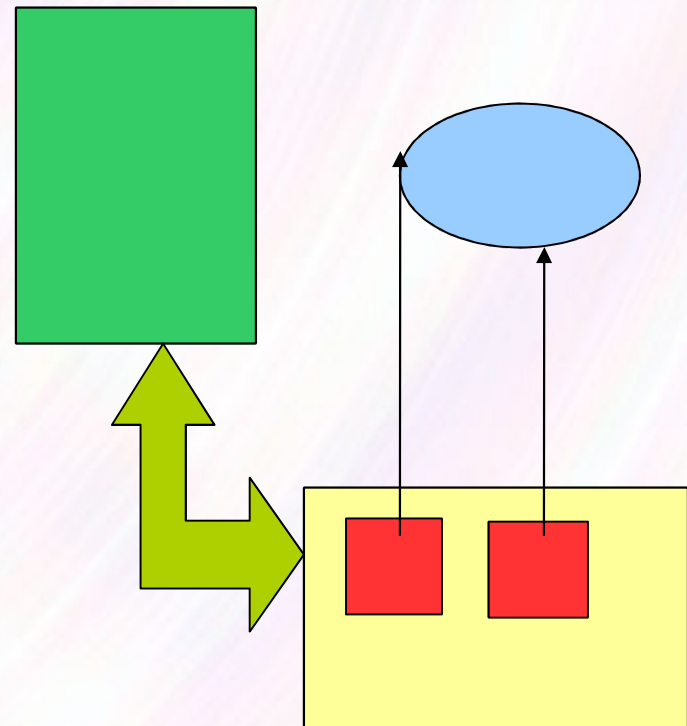


1968 – Evans & Sutherland

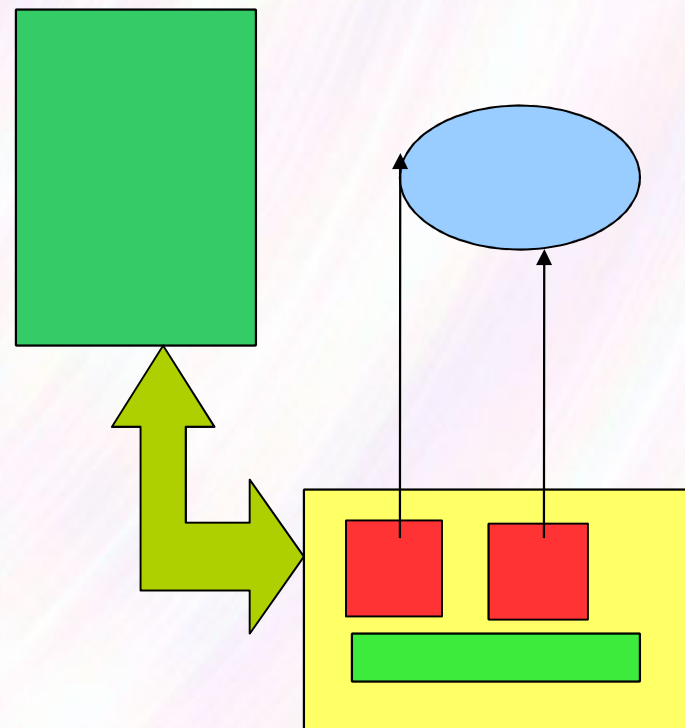
Evolução da Computação Gráfica



Evolução da Computação Gráfica

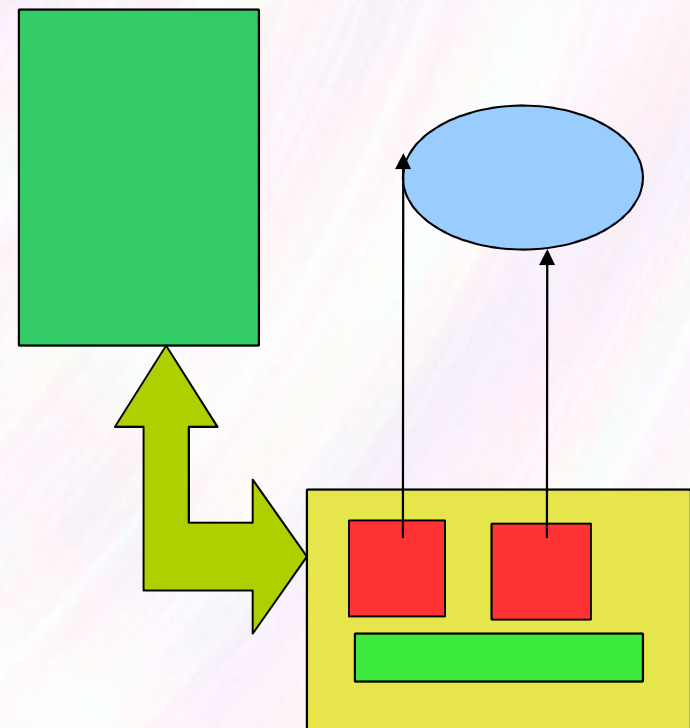


Evolução da Computação Gráfica



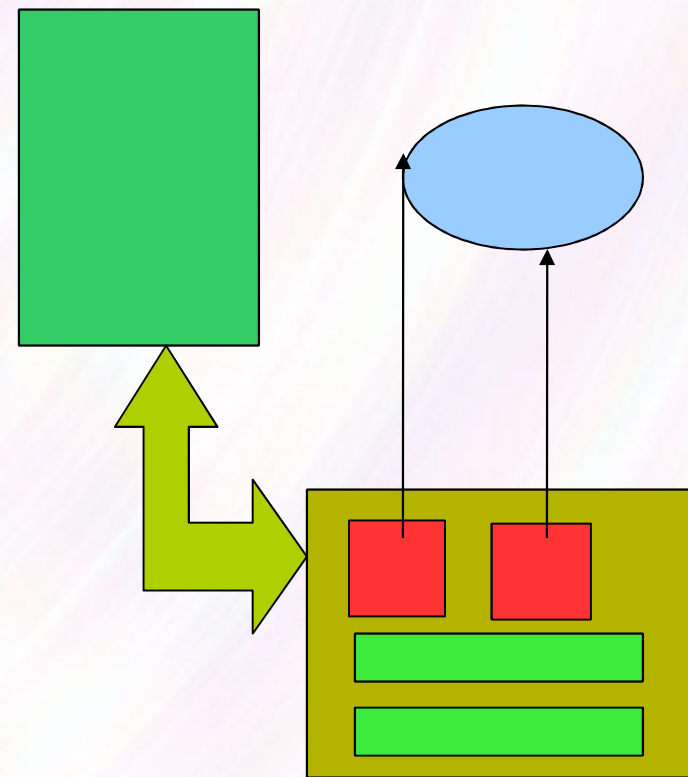
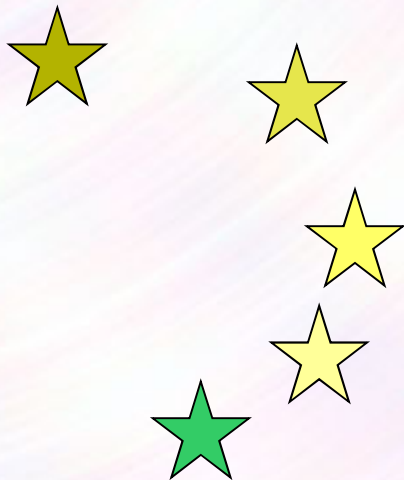
Linhas (e curvas)

Evolução da Computação Gráfica



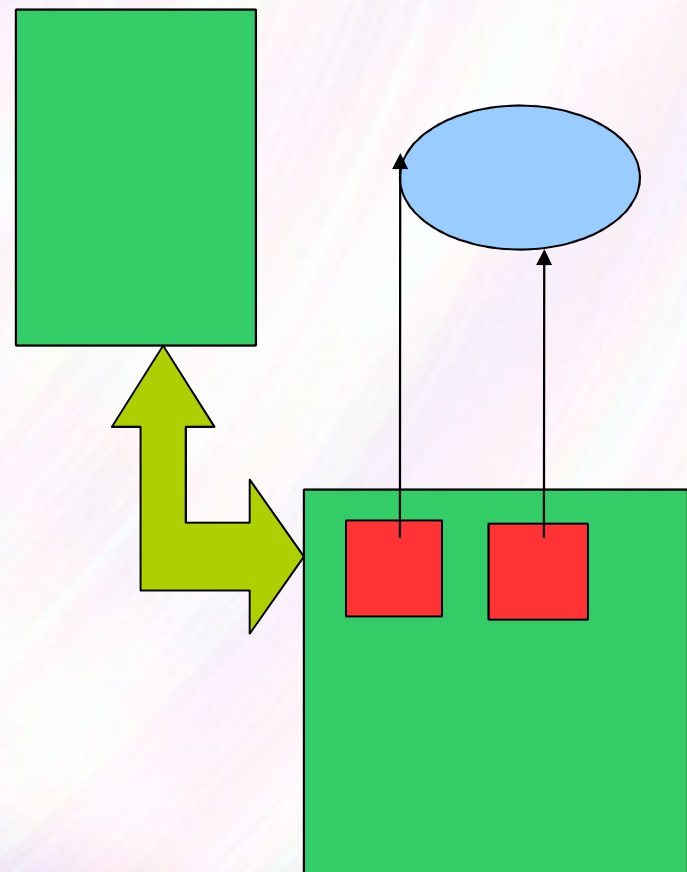
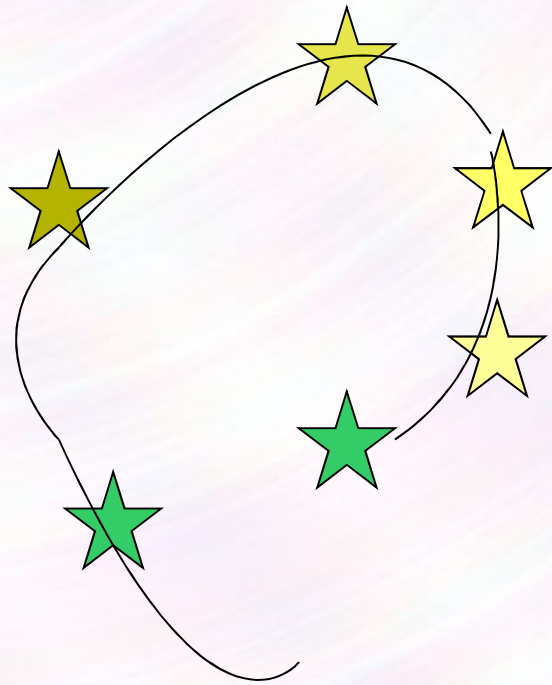
Subrotinas

Evolução da Computação Gráfica



Condicionais

Evolução da Computação Gráfica



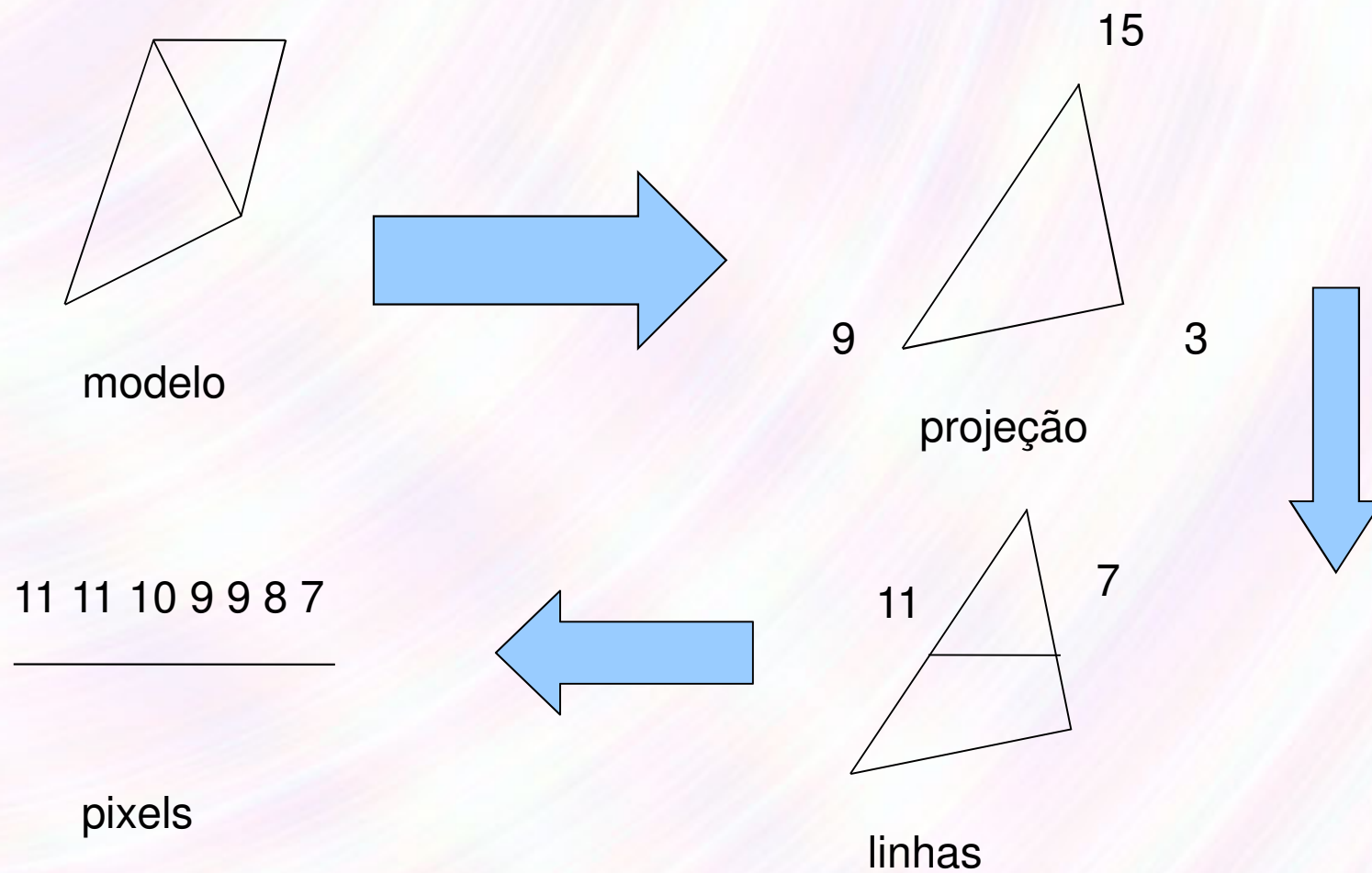
Problema das Linhas Escondidas

1969 – Brown Box de Ralph Baer
(Magnavox)

1971 – Computer Space (Nutting Associates)

1971 – Henri Gouraud

Graphics Pipeline



1972 – Pong (Atari)

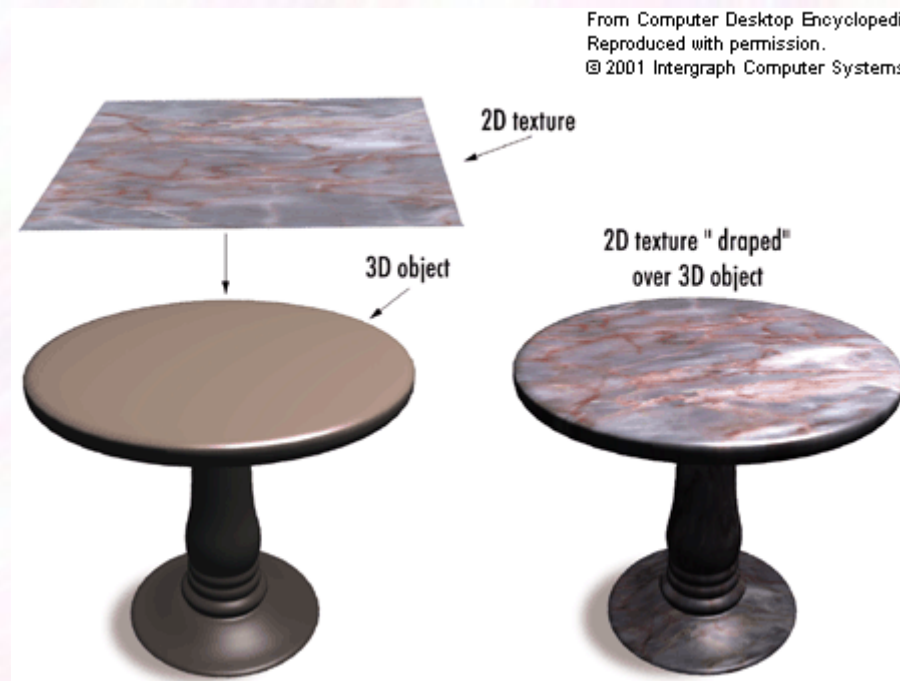


1973 – Bui Tuong Phong

1974 – BitBLT de Dan Ingalls



1974 – Texture Mapping de Ed Catmull



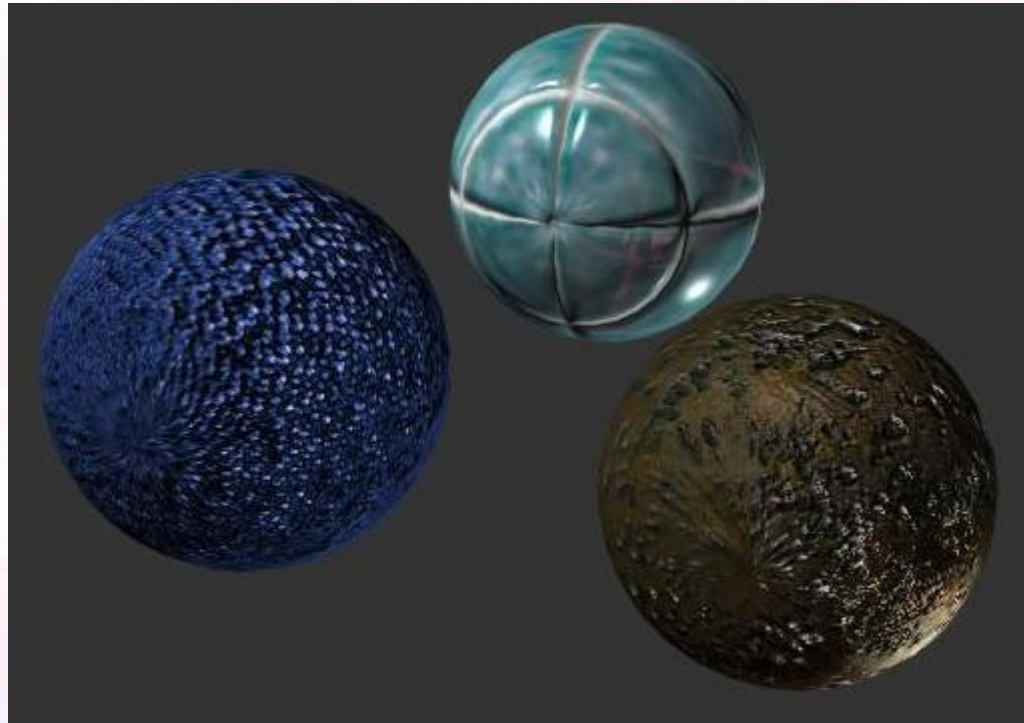
1977 – Atari 2600



1977 – Guerra nas Estrelas

1978 – Space Invaders de Tomohiro Nishikado

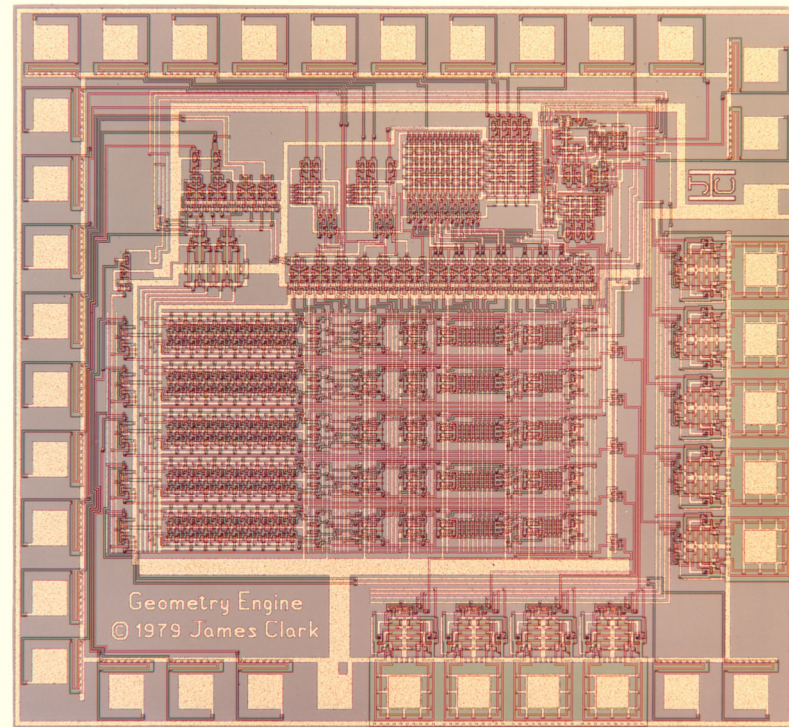
1978 – Bump Mapping de Jim Blinn



1979 – Atari 400 e 800



1979 – Geometry Engine do Jim Clark



1982 - Tron

1982 - Colecovision

1985 – Nintendo Entertainment System



1985 – Amiga (Commodore)



1986 – Luxo Jr (Pixar)

1993 – Doom (Id Software)

1994 – Playstation (Sony)



1996 – Nintendo 64



A Década Seguinte

	CPU	Graphics	Sound	Data
Xbox (2001)	Intel P3 733MHz 32-bit INT 80-bit FP 64-bit MMX 128-bit SSE 32KB L1 128KB L2 1980 MIPS 2.93 GFLOPS 1.0 GB/sec Bus	NVIDIA XGPU 233MHz 1.9G Texels/Sec 3.7G Samples/Sec DX8 Shaders 80 GFLOPS 106M Vertices/Sec Compression FSAA 32-bit Color 6.4 GB/sec Bus	NVIDIA MCPX 256 2D Voices 64 3D Voices Dolby Digital 800 MB/sec Bus	64MB (6.4 GB/s) DVD (8.54GB) 10/100 Ethernet 8GB HDD
Nintendo GameCube (2001)	IBM Gekko 485MHz 32-bit INT 64-bit FP 64KB L1 256KB L2 1125 MIPS 1.94 GFLOPS 1.3 GB/sec Bus	ATI Flipper 162MHz 650M Texels/Sec T&L Engine 8.6 GFLOPS Compression FSAA 24-bit Color 3MB (18.2 GB/s) 2.6 GB/sec Bus	Macronix DSP 64 2D Voices ADPCM 81 MB/sec Bus	24MB (2.6 GB/s) 16MB (81 MB/s) 1.5GB Discs Expansion 56K Modem Ethernet
PS2 (2000)	Emotion Engine 300MHz 128-bit INT 128-bit FP 24KB L1 16KB Scratch 8KB VU0 32KB VU1 450 MIPS 6.2 GFLOPS 66M Vertices/Sec 2.4 GB/s Internal 1.2 GB/s Graphics 3.2 GB/s Memory	Sony GS 150MHz 1.2G Texels/Sec 32-bit Color 4MB (48 GB/s) 1.2 GB/sec Bus	SPU2 48 2D Voices ADPCM 2MB	32MB (3.2 GB/s) DVD (4.7GB) CD (650MB) Expansion 56K Modem 10/100 Ethernet 40GB HDD
Sega Dreamcast (1999)	Hitachi SH4 200MHz 32-bit INT 64-bit FP 24KB L1 360 MIPS 1.4 GFLOPS 800 MB/sec Bus	PowerVR Series 2 100MHz 100M Texels/Sec Deferred Rendering Compression FSAA 32-bit Color 8MB (800 MB/s)	Yamaha AICA 64 2D Voices ADPCM 2MB	16MB (800 MB/s) 12x GD-ROM (1GB) 56K Modem Expansion 10/100 Ethernet



A Última Geração

Nintendo Wii (2006)

CPU

IBM Broadway
729MHz
256KB L2
2.9 GFLOPS
1.9 GB/s Bus

Graphics

ATI Hollywood
243MHz
975M Texels/Sec
3MB Buffer (27.3 GB/s)
7.9 GB/s Memory

Memory

24MB (3.9 GB/s)
64MB (4 GB/s)
512MB Flash
8.5GB Optical Discs

PS3 (2006)

Cell
3.2GHz
1 Main Core
512KB L2
7 Auxiliary SIMD Units
1.75MB Local Memory
217.6 GFLOPS
25.6 GB/s Memory

NVIDIA RSX
500MHz
24 Pixel Pipelines
8 Vertex Pipelines
250M Polygons/Sec
12G Texels/Sec
8G Samples/Sec
20.8 GB/s Memory

256MB (25.6 GB/s)
256MB (20.8 GB/s)
20-80GB HDD
2x Blu-ray (72Mbps)

Xbox 360 (2005)

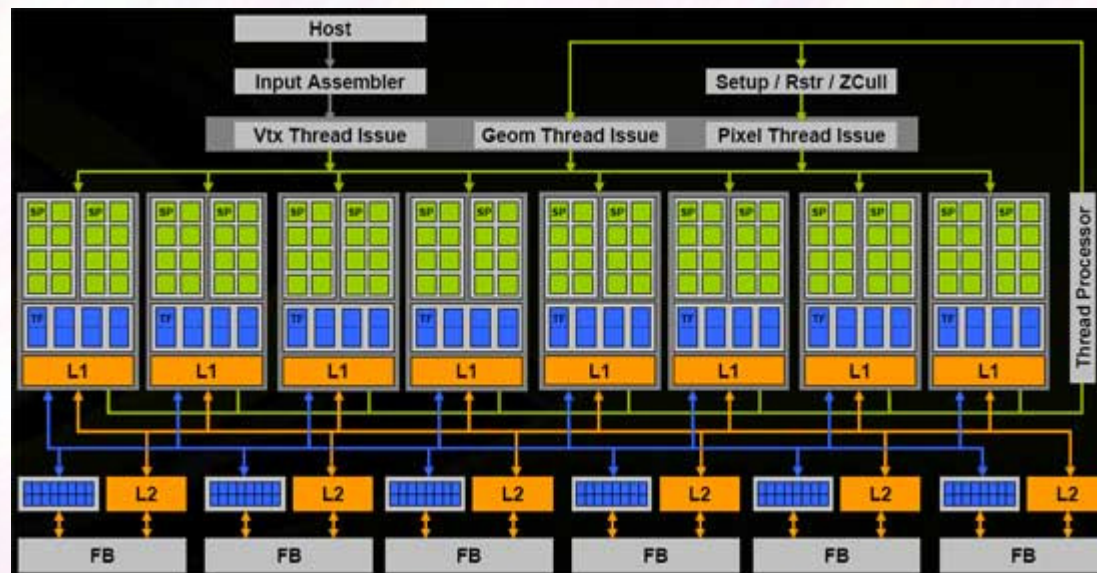
IBM Xenon
3.2GHz
Three Cores
1MB Shared L2
115.2 GFLOPS
21.6 GB/s Interface

ATI Xenos
500MHz
48 Unified Pipelines
500M Polygons/Sec
8G Texels/Sec
16G Samples/Sec
10MB Buffer (256 GB/s)
22.4 GB/s Memory

512MB (22.4 GB/s)
20-120GB HDD
12x DVD (133Mbps)



2006 – Nvidia G80



2007 – Crysis (Crytek/Electronic Arts)

2012 – Warface (Crytek)