1ST ERA: Fixed Function

3D Geometry Transformation

$$V_{\text{eye}} \begin{bmatrix} x \\ y \\ z \\ w \end{bmatrix} = MVP \begin{bmatrix} m_0 & m_4 & m_8 & m_{12} \\ m_1 & m_5 & m_9 & m_{13} \\ m_2 & m_6 & m_{10} & m_{14} \\ m_3 & m_7 & m_{11} & m_{15} \end{bmatrix} \bullet V_{obj} \begin{bmatrix} x \\ y \\ z \\ 1 \end{bmatrix}$$

$$V_{\text{nex}} \begin{vmatrix} s \\ t \\ r \\ q \end{vmatrix} = M_{\text{proj}} \bullet V_{\text{in}}$$

Lighting

$$C_p = k_a L_a + \sum_{n-lights} Att_n (k_d (\hat{L}_n \bullet \hat{N}) + k_s (\hat{R}_n \bullet \hat{V})^{\alpha})$$



2ND ERA: Simple Shaders

Memory Interface

8 Vertex Pipes

Setup Engine

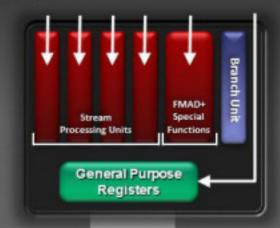
Pixel Shader Core

16 Pixel Pipes

1000 0

3RD ERA: Graphics Parallel Core

VLIW5



VLIW4

