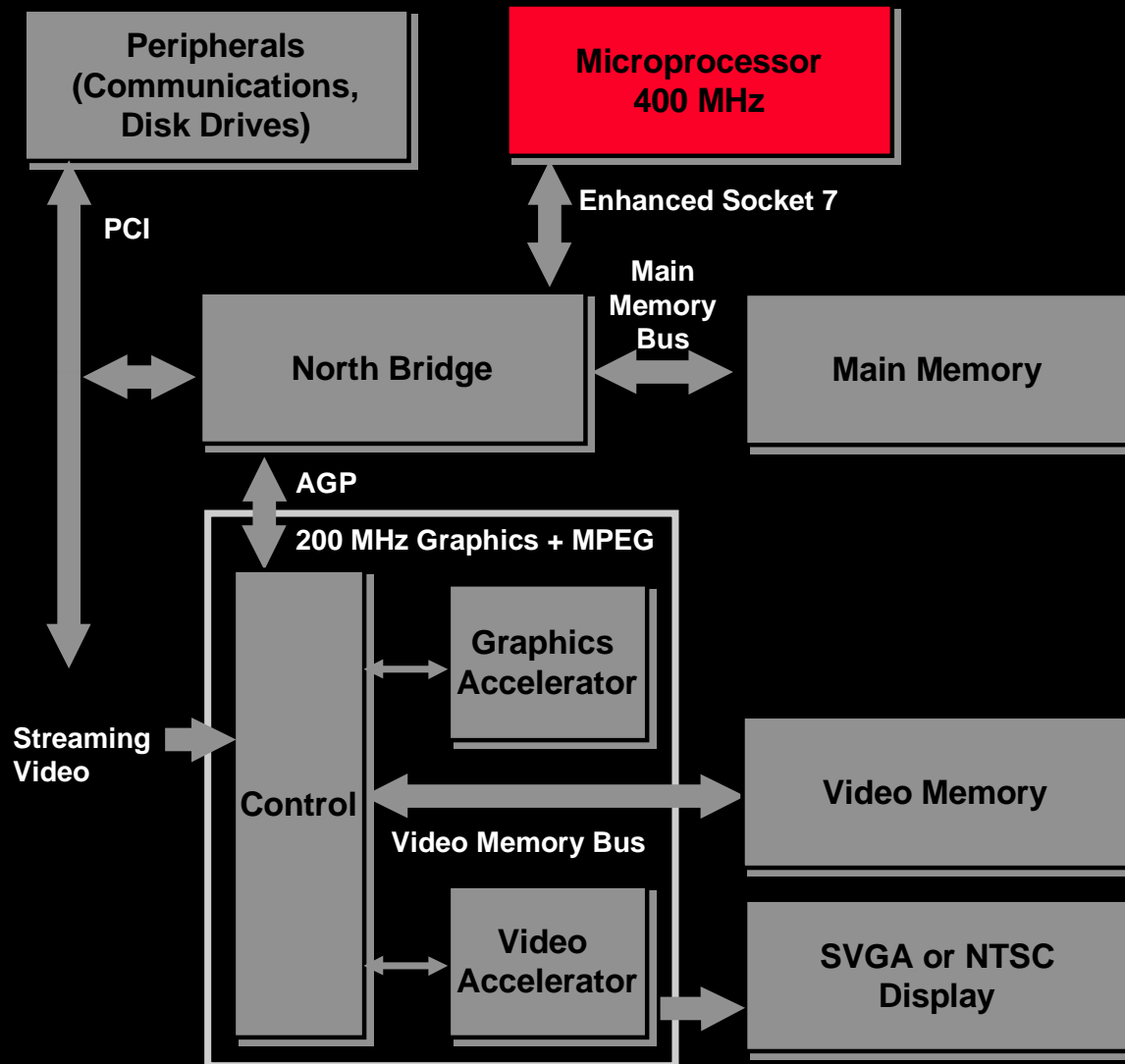


Platform Components for 3D Graphics

3D Graphics Platform Components



Platform Component

K6+ Microprocessor
North Bridge
Main Memory
Video Memory
Graphics Accelerator
Video Accelerator

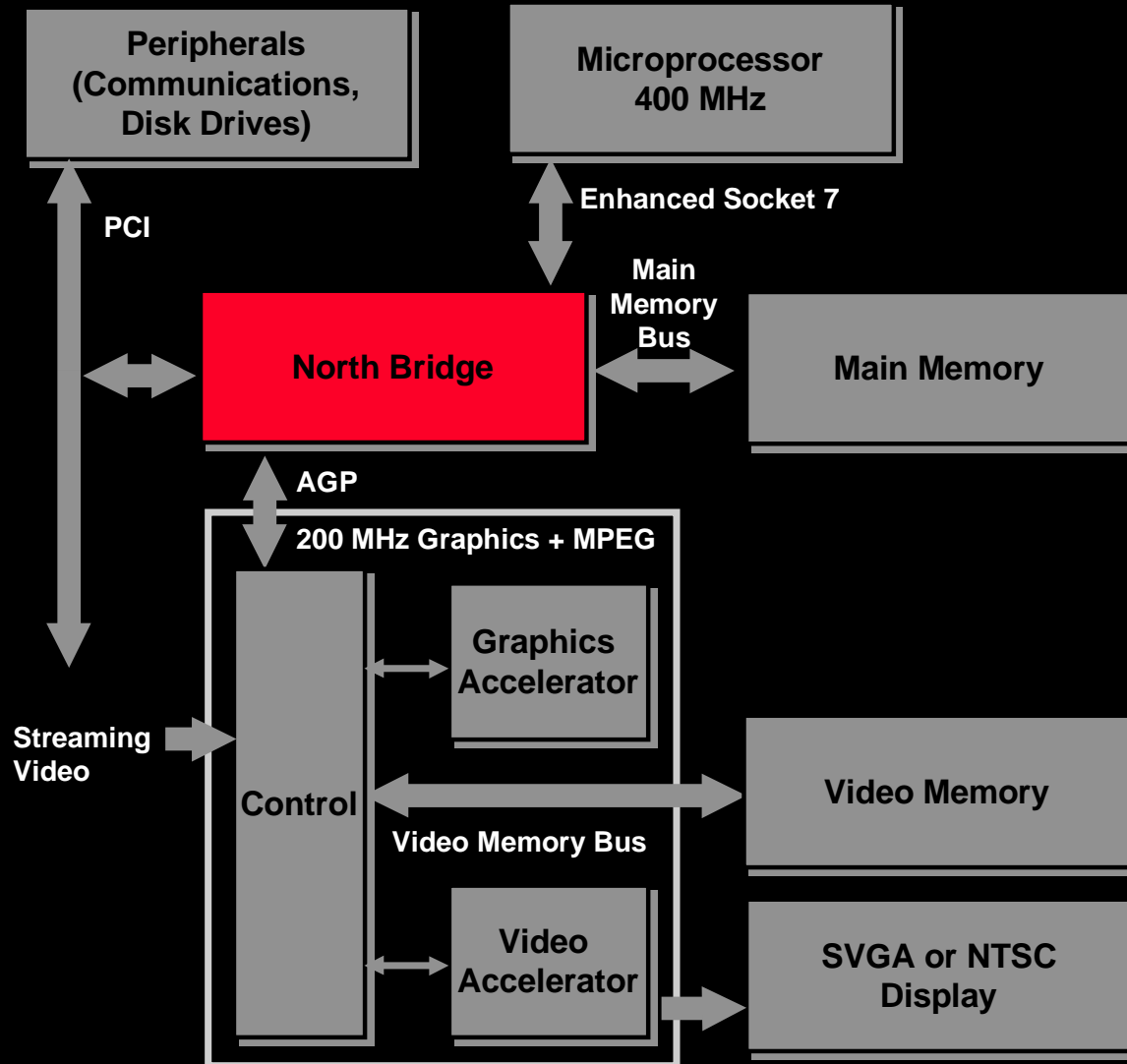
Role in Graphics

3D Application & API Execution
Mapping of 3D Scenes to Frames
Object Modeling
Perspective Translation
Lighting
Setup for Graphics Accelerator

Operating Paradigm

Floating Point (single precision, vectors)

3D Graphics Platform Components



Platform Component

K6+ Microprocessor
North Bridge
 Main Memory
 Video Memory
 Graphics Accelerator
 Video Accelerator

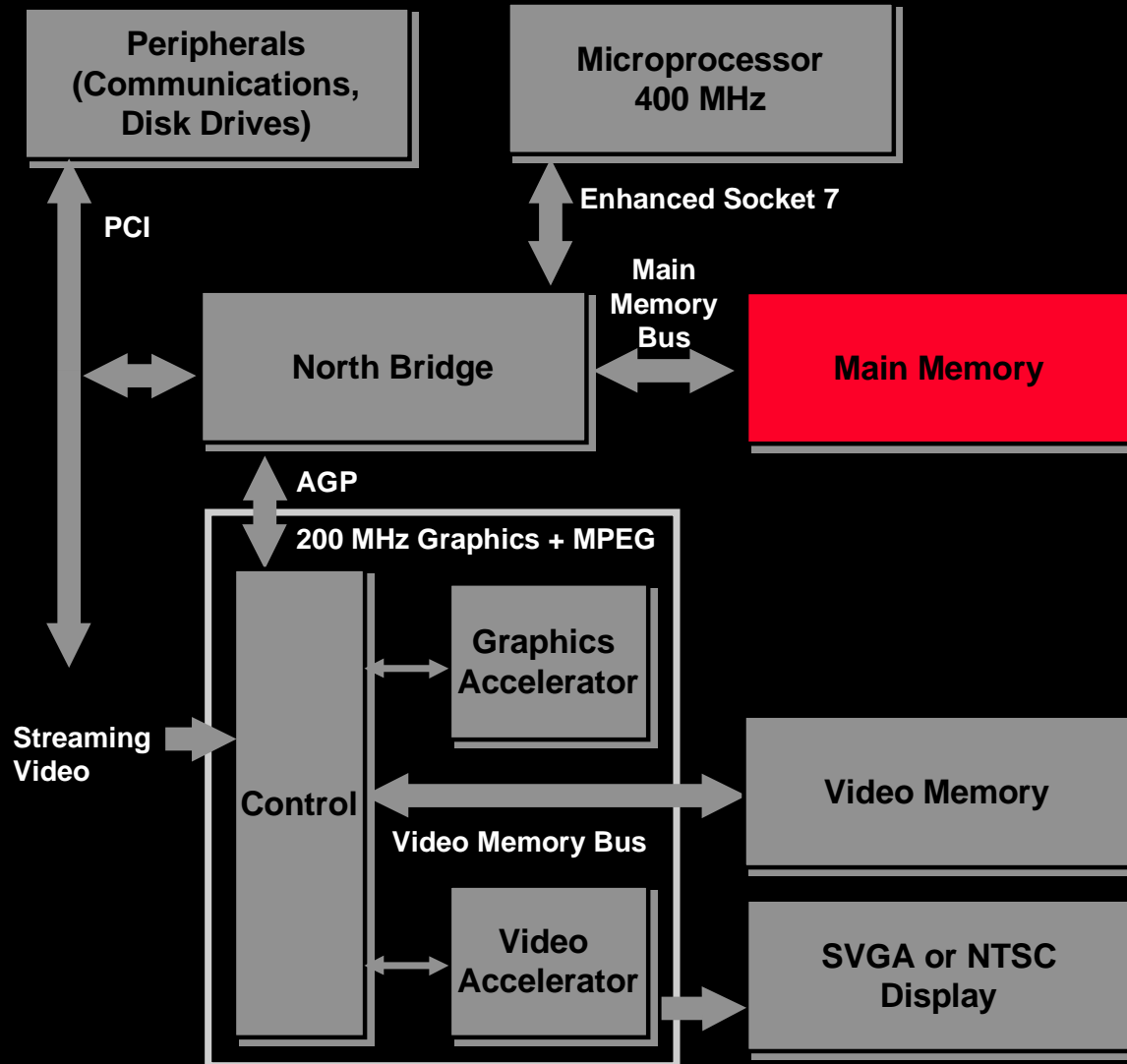
Role in Graphics

- **Main Memory Controller**
 - virtualize multiple ported main memory
 - arbitration
 - prefetch
- **Bus Controller**
 - isolate buses for speed and concurrency
 - manage crossing transfers
 - buffering of write data and commands to avoid stalls

Operating Paradigm

Data Transfers and Buffering

3D Graphics Platform Components



Platform Component

K6+ Microprocessor
 North Bridge
Main Memory
 Video Memory
 Graphics Accelerator
 Video Accelerator

Role in Graphics

- Code Areas
 - operating system
 - DirectDraw, Direct3D API
 - 3D applications
- Data Areas
 - system and applications
 - display lists
 - texture maps
- Accessed by
 - processor and cache
 - PCI Bus-master peripherals
 - AGP

Operating Paradigm

Dynamic Storage of Code & Data

3D Graphics Platform Components

Platform Component

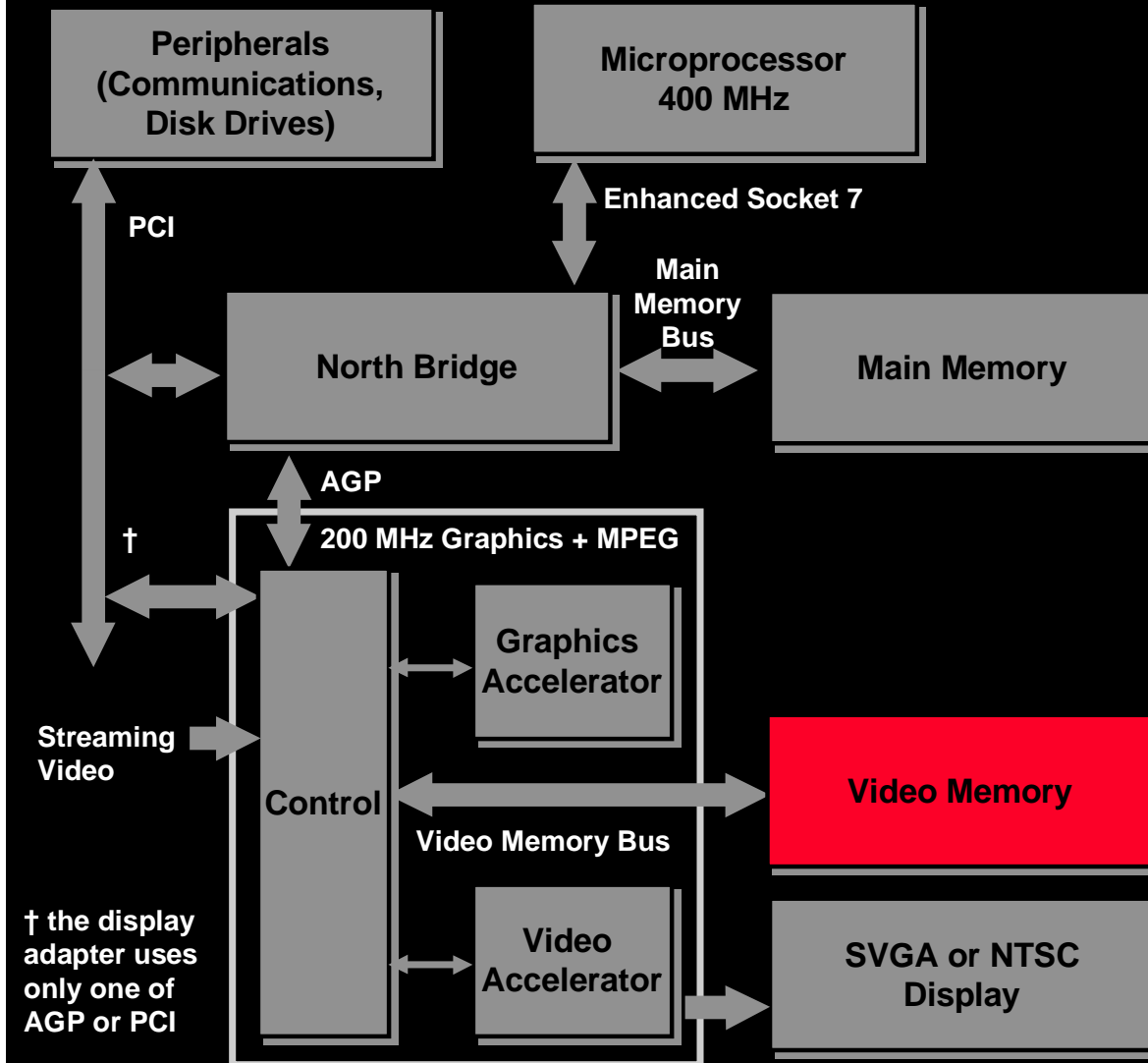
- K6+ Microprocessor
- North Bridge
- Main Memory
- Video Memory**
- Graphics Accelerator
- Video Accelerator

Role in Graphics

- Data Areas
 - frame buffers
 - video buffers
 - texture map cache
 - cursors/sprites
 - depth (z) buffer
 - window coordinates
- Accessed by
 - graphics and video pipes
 - streaming video
 - PCI Bus-master peripherals
 - AGP

Operating Paradigm

Dynamic Storage of Bit-maps and Related Parameters



3D Graphics Platform Components

Platform Component

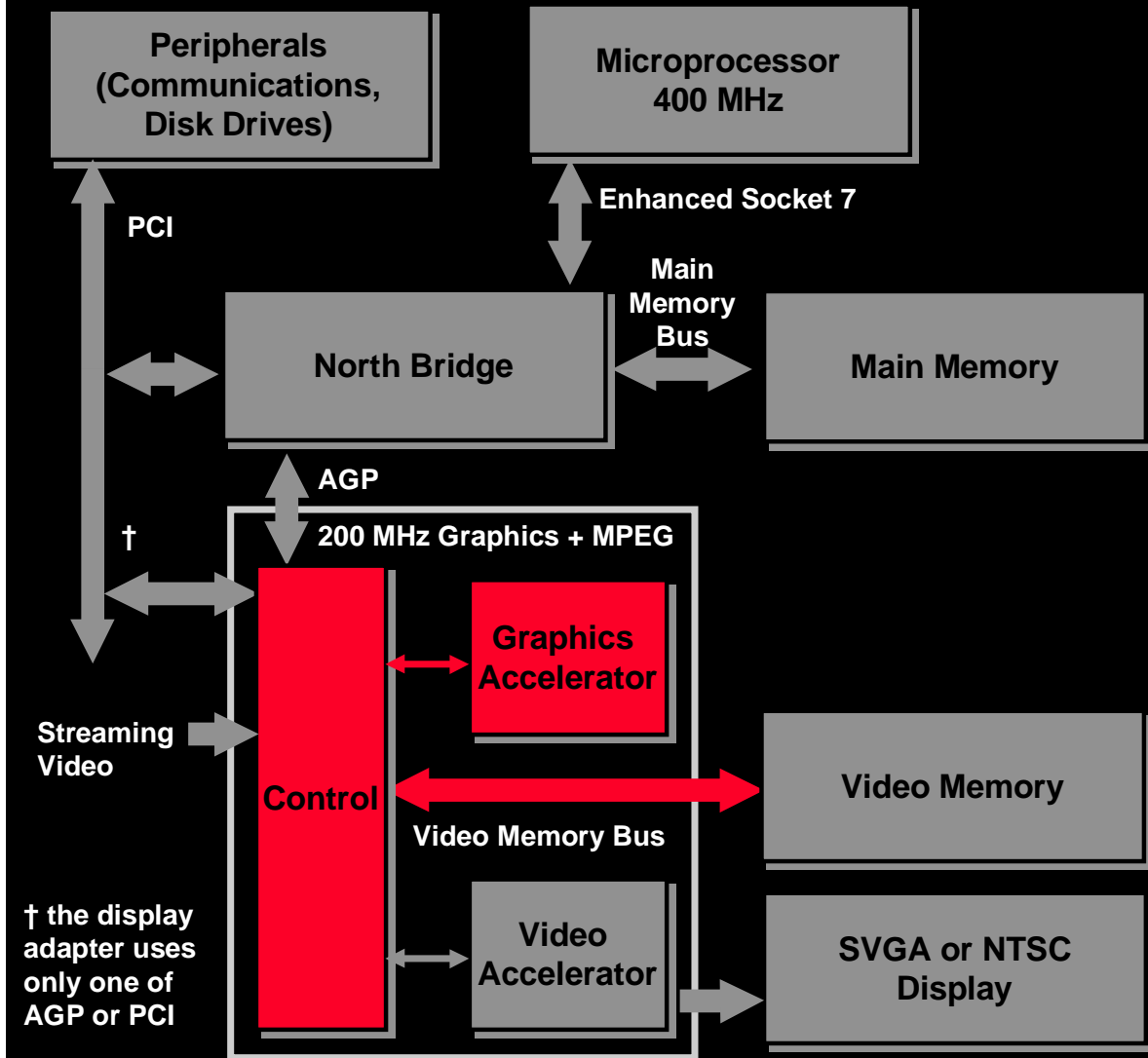
- K6+ Microprocessor
- North Bridge
- Main Memory
- Video Memory
- Graphics Accelerator**
- Video Accelerator

Role in Graphics

- Render
 - execute display list setup by host
 - draw circles, triangles, lines, and points
 - rasterize
- Raster Operations, including Window Management
- VGA register and memory compatibility
- Video Memory Management
- PCI Bus Master

Operating Paradigm

Build and Move Bit-maps



3D Graphics Platform Components

Platform Component

- K6+ Microprocessor
- North Bridge
- Main Memory
- Video Memory
- Graphics Accelerator
- Video Accelerator**

Role in Graphics

- Display Refresh
 - frame buffer fetch
 - frame rate conversion
 - pixel, scanline, frame timing
- Interpolation (decompression)
- Color Space Conversion
- Color Look Up
- Hardware Scaling
- Pixel Stream Mixing (cursor insertion, sprite motion effects, streaming video)
- Digital to Analog Conversion

Operating Paradigm

Pump Pixels to the Display

