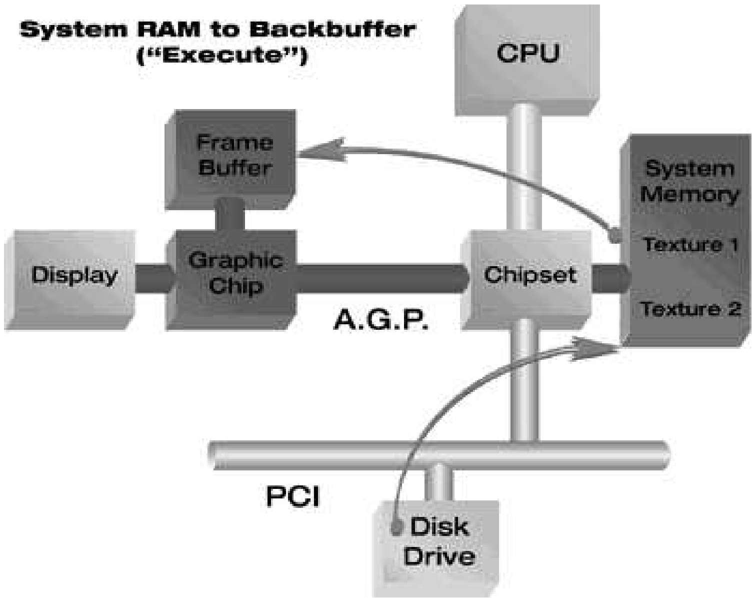
Accelerated Graphics Port tutorial

Chapter 2: 3D Graphics on Next Generation PCs

3D graphics are certain to benefit from several enhancements to the PC platform. First and foremost is the transition to the Pentium® II processor a heart of the system. The Pentium II processor is able to better handle the geometry stage of the 3D pipeline (i.e., more triangles per second throughp The Pentium II processor consists of a core packaged with integrated level cache memory. The Pentium II processor also features a Dual Independent (DIB) architecture, in which two independent buses connect the core to the cache and to the system bus of the PC. The fact that both buses can operate the same time greatly enhances the performance of the processor, because t processor can simultaneously execute instructions out of the L2 cache and communicate with external devices.

The addition of AGP is, of course, the other key enhancement to the PC platform that benefits 3D graphics. AGP relieves the graphics bottleneck b adding a new dedicated high-speed bus directly between the chipset and th graphics controller. This removes bandwidth-intensive 3D and video traffic from the constraints of the PCI bus. In addition, AGP allows textures to be accessed directly from system memory during rendering rather than being pre-fetched to local graphics memory. Segments of system memory can be dynamically reserved by the OS for use by the graphics controller; this me is termed AGP memory or non-local video memory. The net result is that t graphics controller is required to keep fewer texture maps in local memory. Smaller local memory requirements mean lower overall system cost. This innovation also eliminates the size constraint that local graphics memory p on texture maps, thus enabling applications to use much larger texture map further improving realism and image quality. As a final point, it should be that off-loading graphics and video data from the PCI bus makes more roo available for bandwidth-hungry high-speed devices.



AGP is implemented with a connector similar to that used for PCI, with 32
for multiplexed address and data. There are an additional 8 lines for sidebar
addressing, which is described in the next chapter.

Local video memory is usually more expensive than generalized system memory and it cannot be used for other purposes by the OS when unneeded the graphics of the running applications. The graphics controller needs fast access to local video memory for screen refresh, Z-buffers, and pixels (fron and back-buffers). For these reasons, programmers can always expect to ha more texture memory available via AGP system memory. Keeping textures of the frame buffer allows larger screen resolution, or permits Z-buffering f given large screen size. Most applications could use 2-16 MB for texture storage. By using AGP, they can get it.

Chapter 3

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