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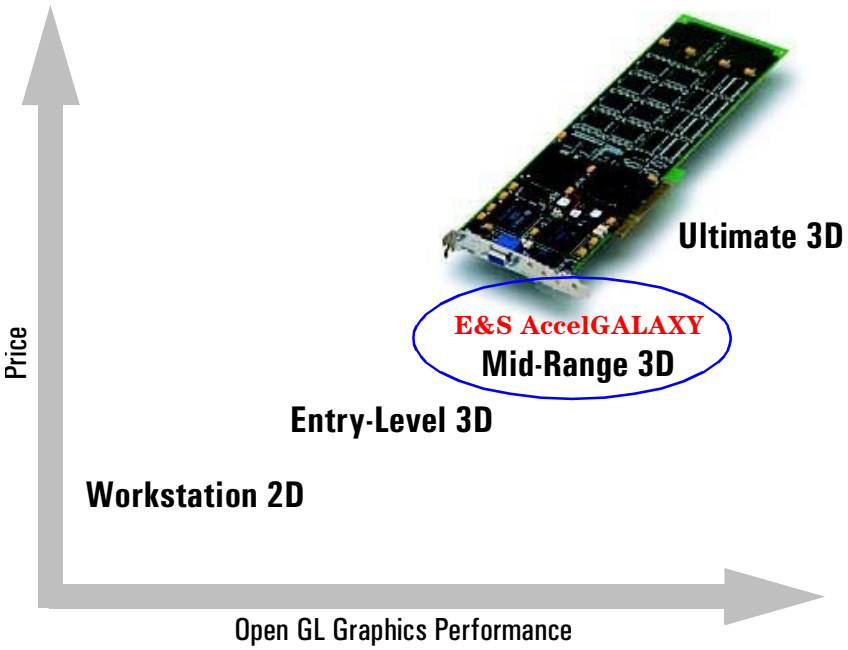
EVANS AND SUTHERLAND ACCELGALAXY 3D OPENGL GRAPHICS CARD

Models of the HP Kayak XA, XA-s and XU PC Workstations are available with the Evans and Sutherland (E&S) AccelGALAXY 3D OpenGL graphics card, one of the best-performing cards in its class and the first to be Intel Pentium® III ready.

Introducing the AccelGALAXY

The AccelGALAXY offers outstanding price/performance value for mid-range OpenGL-based 3D modeling and visualization uses. It is ideally suited for MCAD designers, digital content creators, 3D animation experts, and those performing scientific visualization and engineering analysis.

Background information on the new AccelGALAXY 3D graphics card for HP Kayak PC Workstations.



Benefits of the AccelGALAXY

Ready for the Pentium III and Pentium III Xeon

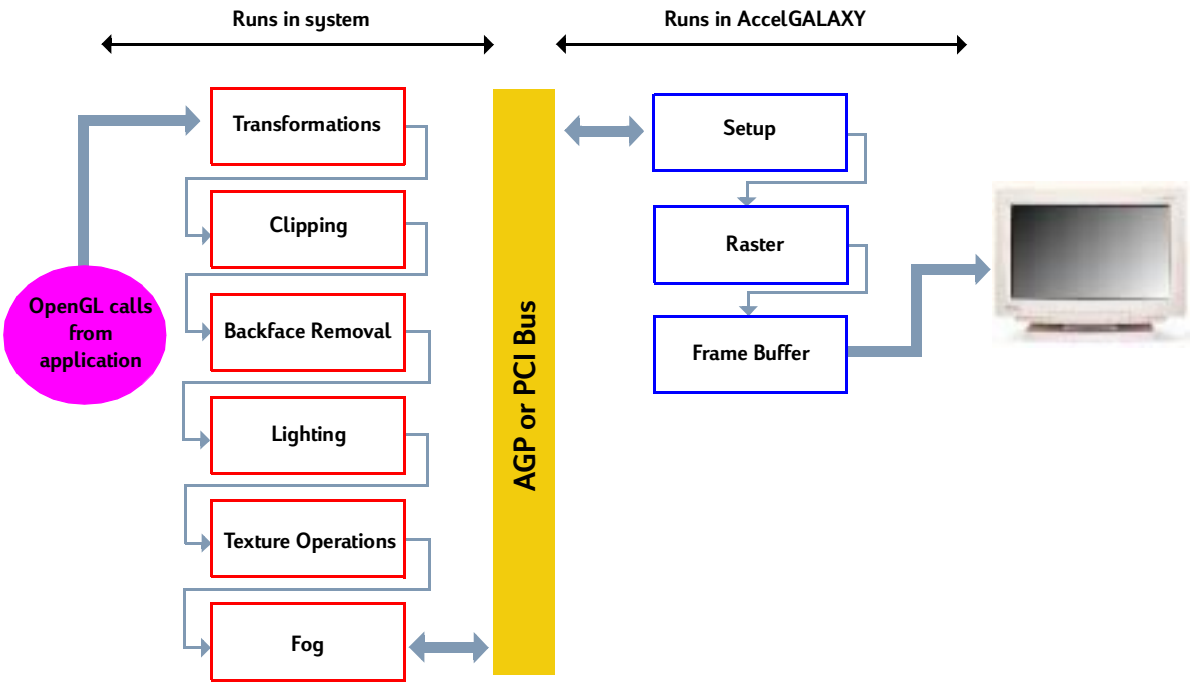
The AccelGALAXY is the first graphic solution on the market to be able to benefit immediately from Pentium III technology—just a driver update is required. In HP Kayak PC workstations equipped with a Pentium III or Pentium III Xeon™ processor, the AccelGALAXY automatically detects the processor and takes advantage of its new "streaming" data technology.

These streaming Single Instruction Multiple Data (SIMD) instructions are one of the major innovations of the Pentium III. They allow the Pentium III to process four floating-point instructions concurrently. In situations where processor-intensive floating-point calculations are required, such as transformations, texture coordinate calculations and lighting operations, this can lead to an almost 100% performance improvement (see "Benchmarks" below). In dual-processor HP Kayak PC Workstations, the SIMD instructions can be used in both processors.

The Pentium III support in the AccelGALAXY is the result of a long-standing relationship between Evans & Sutherland and Intel, and offers real processor scalability and investment protection.

Scalable Performance with DYNAMICGeometry

With the AccelGALAXY, E&S introduces DYNAMICGeometry®, a completely re-designed OpenGL driver that takes advantage of the Pentium III's new SIMD extensions to provide outstanding performance that scales automatically with increasing processor speeds.



As the above diagram shows, with DYNAMICGeometry all floating-point intensive operations run in the PC workstation's processor, while other operations are performed on the graphics card. Other graphics cards, such as 3D Labs' Oxygen GX2000, perform floating-point intensive operations in the geometry engine of the card itself, and so are scarcely able to benefit from the Pentium III's capabilities.

Stability and Quality

The AccelGALAXY is a natural evolution from the AccelECLIPSE card used in many previous HP Kayak PC Workstation models. Both cards use the same core graphics technology (the REALImage chipset), the same core OpenGL graphics engine, and support the same OpenGL extensions. The AccelGALAXY, however, uses the latest REALImage 2100 chipset running at 100MHz (against 70MHz), provides integrated VGA support and support for 3D Max dual planes.

With its Pentium III support, the AccelGALAXY provides dramatically improved performance whilst retaining the proven design of the AccelECLIPSE, offering great stability and high quality from one of the industry's largest and most respected manufacturers.

Widespread ISV and Application Support

The AccelGALAXY's OpenGL installable client driver (ICD) is well respected and has already attracted support from leading applications such as:

- Unigraphics (Unigraphics Solutions)
- Lightwave 3D (Newtek)
- ProEngineer (PTC)
- CATIA (Dassault Systèmes)
- Mechanical Desktop (Autodesk)
- 3D Studio Max (Kinetix)
- SoftImage (Avid)
- SOLIDdesigner (CoCreate)
- Microstation (Bentley)
- I-DEAS Master Series (SDRC)
- AVS/Express (AVS)
- and others.

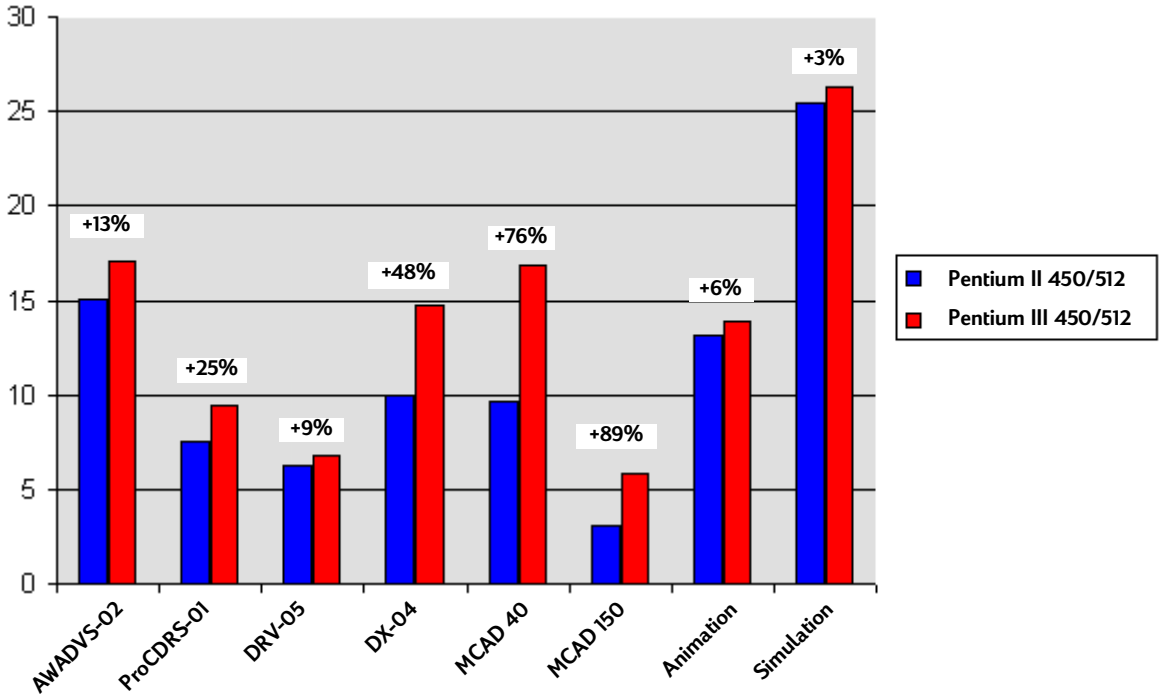
Technical Features and Benefits

The following table list some of the key features of the AccelGALAXY.

Feature	Benefit
Chipset	High-performance 100 MHz REALImage 2100 rendering processor—up to 4M triangles per second (25-pixel, Z, smooth-shaded).
31MB total video memory: - 15MB 3DRAM frame buffer memory . 24-bit true color, double buffered . 24-bit Z buffer . 4-bit Windows ID . 4-bit stencil plane or overlay plane - 16MB Cache DRAM texture memory Integrated 220MHz virtual DMA engine	Supports ergonomic, high-resolution refresh rates, up to 1280*1024 pixels in true color (16.7M colors)
90M pixels per second sustained performance	Outstanding performance that remains constant as features are turned on.
100MHz Accelerated Graphics Port (AGP) bus system	Allows high-speed data transfers of up to 533MB/sec
Bi-directional virtual DMA engine	Improves CPU utilization
DYNAMICGeometry architecture	Takes full advantage of the new Pentium III SIMD instructions and architecture
OpenGL hardware features: - Flat and Gouraud shading - Alpha blending for transparency - High-quality anti-aliasing - Fog and depth-cueing - Scissoring and stapling	Ensures compatibility with leading standards
Hardware texture acceleration: - Hardware support for all OpenGL 1.1 texture modes - Point-sampled, bilinear, and trilinear MIP mapping - YUV texture format for full-speed video into texture memory support	Assures outstanding texture mapping performance
OpenGL 1.1 compatible, OpenGL1.2 ready	OpenGL compatibility today and in the future, helping protect your investment

Benchmarks

The following chart compares the performance of the AccelGALAXY on similarly configured HP Kayak PC Workstations using a Pentium II and a Pentium III processor.



The Indy 3D, MCAD 40 and MCAD 150 benchmarks, for example, are geometry-intensive, so benefit significantly from the Pentium III (up to 89% performance gains). However, applications that are texture-mapping intensive, such as the Animation and Simulation benchmarks, show, as expected, only small performance gains.

For up-to-date performance benchmark figures, refer to the HP Kayak Performance web page at: http://www.hp.com/go/kayak/performance.

Conclusions

The E&S AccelGALAXY is the perfect graphics solution for performing mid-range 3D graphics. It really comes into its own on Pentium III-based HP Kayak PC workstations, where it's redesigned architecture is able to take full advantage of the Pentium III's new SIMD instructions to deliver greatly increased graphics performance.

http://www.hp.com/go/kayak