

HIGH-SPEED 3D RENDERING IN WINDOWS™ NOW POSSIBLE WITH 3DR GRAPHICS INTERFACE FROM INTEL

Graphics Intensive Entertainment, Visualization, and Scientific/Engineering 3D Applications Under Windows Will Draw Up to 10 Times Faster

SANTA CLARA, Calif, April 25, 1994 -- Intel today announced the 3DR interface, a graphics systems programming interface designed to boost the performance of 3D graphics and real-time animation, and the display of photo-realistic images on Intel486™ and Pentium™ processor based PCs running Windows.* The 3DR interface was developed by the Intel Architecture Labs.

As a graphics interface, the 3DR technology provides a Windows compatible method for accelerating the rendering and texture mapping of 3D objects. This acceleration is achieved by the 3DR interface's ability to take full advantage of the advanced 3D graphics acceleration hardware found increasingly on many of today's high-end graphics cards. Intel's 3DR interface offers software developers of games, visualization and/or scientific applications, a complete systems software building block upon which to develop 3D graphics application program interfaces (APIs) such as HOOPS* and Silicon Graphics' OpenGL.* It also provides a means to accelerate 3D graphics in Windows for developers who want to create their own in-house APIs.

"The 3DR graphics interface complements the 2D graphics functionality of Windows' Graphics Device Interface," said Ron Whittier, senior vice president, Intel Architecture Labs. "The 3DR interface will make it possible for new visualization, entertainment, and CAD applications to be ported to Intel-based PCs running Windows. It also offers a way for graphics hardware vendors to deliver innovative 3D accelerator cards to the Windows PC environment. Intel is making the 3DR interface widely available, and will license necessary intellectual property on a reciprocal, royalty free basis to ensure widespread adoption by the industry."

Key Features

Intel's 3DR systems programming interface offers the following features and capabilities:

- A complete set of 3D primitives for rendering triangles, polygons, polylines, lines, and points
- The ability to vary the quality of rendering from flat shading (a single color per primitive) to smooth shading (color interpolation) with anti-aliasing
- Texture mapping with true perspective correction and filtering
- Raster images and bitmaps for fonts and sprites

Benefits for Graphics Subsystem and Software Developers

The latest generation of advanced 3D graphics subsystems offer specialized acceleration hardware. To date, subsystem developers have been required to write their own custom systems programming interfaces in order to exploit their specialized 3D rendering hardware when operating in the Windows environment. The 3DR interface

provides a solution. In addition to the 3DR interface, Intel is working with graphics subsystem developers to provide device drivers based on the Windows 3D DDI (Device Driver Interface) specification. For software developers, the 3DR interface provides a device independent means to take advantage of graphics acceleration hardware.

3D Rendering Speed in Windows Up to 10 Times Faster with 3DR

In tests conducted at the Intel Architecture Labs involving high-end 2D SVGA graphics cards the 3DR interface boosted the rendering of animated scenes with flat shaded objects up to five times faster than currently available Windows graphics interfaces. When used with the current generation of graphics cards featuring powerful 3D acceleration hardware, the 3DR interface's scalability is expected to render animated scenes with flat, smooth, and texture mapped objects up to 10 times faster. Even greater performance improvements may be achieved when the 3DR interface is used with the next generation of graphics acceleration hardware.

Wide Industry Support

The following hardware vendors, in cooperation with Intel, plan to deliver graphics drivers that comply with the 3DR interface and to fully support Microsoft's 3D DDI extensions: Artist Graphics Inc., ATI Technologies Inc., Cirrus Logic Inc., Diamond Computer Systems, Matrox Electronic Systems Ltd., Media Vision Inc., S-MOS Systems (an affiliate of Seiko-Epson Inc.), S3 Incorporated, Tseng Labs Inc., Weitek Inc., Western Digital Corporation and 3Dlabs Inc. Software Developers endorsing the 3DR interface include Books that Work, Ithaca Software Inc. (a subsidiary of Autodesk, Inc.), Media Vision Inc., Sense8 Corporation, Sierra On-Line Inc., Spectrum Holobyte Inc., and Virtus Corporation.

"There is rapid innovation in graphics hardware and software for Windows," said Carl Stork, director of Windows Platform Definition, Microsoft Corporation. "Open interfaces such as Microsoft's 3D DDI enable broad software support, such as Microsoft's OpenGL* 3D API, other 3D APIs and toolkits based on Intel's 3DR, to use advanced graphics hardware. We are pleased that Intel's 3DR interface takes advantage of the 3D DDI and extends the capabilities of the Windows platform."

Intel and Microsoft to Work Together on 3D DDI

Microsoft and Intel have agreed to jointly review the specification for the device driver interface extensions for 3D hardware (3D DDI) for the Windows family with interested graphics vendors. The 3D DDI enables vendors of 3D accelerated graphics hardware to develop a device driver which implements 3D acceleration for multiple 3D graphics toolkits, such as Microsoft's implementation of OpenGL and toolkits based on 3DR. The 3DR interface encapsulates the 3D DDI, taking advantage of 3D hardware when it is available.

3DR Interface Software Development Kit Availability

A pre-release 3DR interface software development kit will be available in June 1994 from Intel free of charge to qualified developers. Each kit includes software, documentation, and a user's guide with programming examples. The final release of the kit (expected to be available in September 1994) will include rights to ship product based

on the 3DR libraries royalty free. To request information on the developer's kits and training courses, users can send email via Internet at 3DGraphics@intel.com.

The Intel Architecture Labs (IAL) is a research and development organization located in Hillsboro, Oregon, and Santa Clara, California. Its charter is to establish new capabilities that extend and advance the PC architecture to make it easier to use, connect and access by providing technology building blocks to the PC industry. In addition to the PCI, QuickSwap, Indeo™ video, and the MultiProcessor Specification standards, IAL has developed the advanced power management (APM), telephony API (TAPI), Display Control Interface (DCI), and Plug and Play standards with Microsoft.

Intel, the world's largest semiconductor company, is also a leading manufacturer of personal computer, networking and communications products.

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