

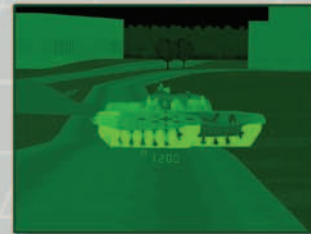
HARDWARE / SOFTWARE COMPATIBILITY

- DirectX 9.0 compliant for the most compatibility with modern rendering hardware, ranging from entry-level to high-end desktop cards, as well as laptop chipsets.
- Capable of use and exploitation of multiple CPUs for culling, rendering, and dynamic database update.
- Optimized for Intel Pentium 3 and Pentium 4, as well as AMD Athlon CPUs.
- Runs on Windows 2000 and Windows XP Home/Professional.



KEY FEATURES

- Support for a hardware synchronization device, assuring a locked frame rate at any multiple of 16.666 mS (60Hz).
- Support for software controlled frame rates. (For cases where absolute update precision is not required.)
- Multiple/overlapping viewports, with viewport-specific light settings, and viewport position and orientation offsets.
- Flipbook and completely user-tunable procedural/particle animations (smoke, fire, explosions, with dynamic wind effects.)
- User-created and controlled graphics primitives in the scene.
- Multiple palette sets to support sight types or weather conditions.
- Environmental weather effects such as rain, snow, fog, and haze.
- Built-in thermal simulation does not compromise throughput for scene realism and is selectable at any time within one visual frame. Displays equally well full-screen or in a separate viewport. Thermal simulation is available simultaneously in multiple viewports with separate color/gain/bias/noise control, and with daylight views on the same device. (Sensor licenses only.)
- Image Intensification/Passive simulation, including blooming and blurring effects, as well as automatic gain control. (Done on the graphics card, without the complexity and expense of proprietary off-board or out-of-box devices. Sensor licenses only.)
- TrueBright™ reticules/graticules/symbology, always sharp and bright, with color/translucency, position, and scaling control, regardless of full-screen antialiasing settings. (Sensor licenses only.)
- Mission functions/geometry tests that provide a variety of return data corresponding to the visual scene. This allows BARE to be your "eye into the database".
- Mission function debug mode that draws test vectors in the visual scene.
- Network interface — up to 30 visual systems from a single application host machine, using standard 100Mbps Ethernet. (Networked licenses only.)
- Record and playback capability for troubleshooting and demos.
- Import support for MultiGen OpenFlight and 3D Studio Max data.
- Dynamic Database Update support to allow large databases containing geo-specific textures, with multiple color/texture palettes.
- Multiple viewpoints.
- Entity attachments, including viewpoints to models, models to models, and models to viewpoints.
- Infinite levels of articulation for models.
- Support for rendering masks / model switches.
- Efficient texture-based text display that doesn't interfere with throughput.
- Support for integration of 3rd party renderers in the graphics pipeline. (Any properly designed application using DirectX 8.1/9.0 or can be supported.)
- Support for multiple simultaneous databases, which are required on legacy systems for things such as mission function specific data.
- Support for model scaling / size clamping.
- Support for point light strings with actual / minimum / maximum size, control of color and fog punch through per element and palette set.
- Networked visuals status / configuration reporting.



BETTER APPROACH RENDERING ENGINE

A D V A N C E D V I S U A L E F F E C T S

LOCKED FRAME RATE

When a trainer is used, one of the most important things to happen is the suspension of disbelief. In order to train effectively, users of a trainer must be able to believe that the 3D images being rendered are "real." One of the problems that prevent the user from believing this is frame drop (when the visual system cannot keep up with the rendering or auxiliary requirements being placed on it by the application).

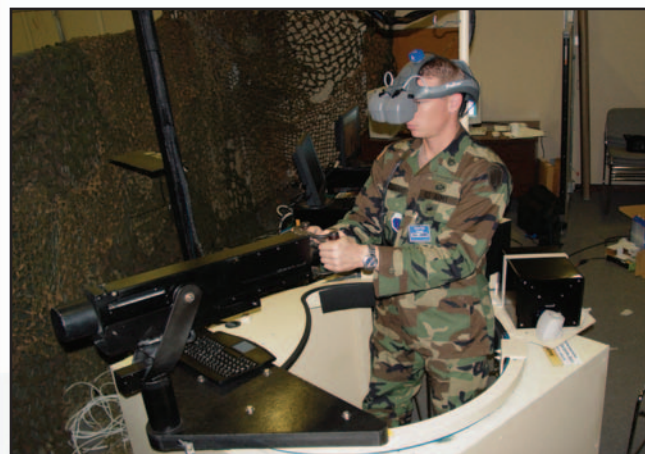
Trainers tend to render 3D scenes at a fixed rate of either 30Hz (updates per second) or 60Hz. Rates of change in trainers are not scaled to a frame rate because this causes "jerkiness." Since the application cannot predict a frame drop, it can only respond to it.

BARE is a building block for trainers who wish to provide the most realistic experience possible, thereby avoiding negative training. BARE employs a hardware synchronization device to lock rendering updates to the chosen design limits, resulting in typically less than a 1% variation in frame rate (below the limits of human perception). In the very common case that there is time left over, this is either idle time, or time that can be used to query the database for data (commonly called "mission functions"), or in the case of a desktop or laptop trainer, running the trainer application.

TRUEREALISM™ MEANS ACCURACY IS NOT SACRIFICED FOR SPEED.

Modern training systems are not games...and training is certainly not a game. Game engines tend to sacrifice quality for performance. BARE, on the other hand, delivers quality rendering first, then adds optimum performance as an additional benefit.

BARE makes use of unique rendering methods that avoid anomalies and artifacts by taking a more balanced, intelligent approach to rendering. The throughput capabilities of modern graphics boards are amazing, but training is not only about rendering an infinite number of polygons. Raydon's BARE rendering algorithms were designed by the foremost visual engineers in the industry with design experience on Lockheed Martin's Pro-1200, PT2000, SE-1000, Evans and Sutherland's ESIG line, Real3D Starfighter, and SEGA II/III rendering hardware. In addition, Raydon constantly works with graphics cards providers such as nVIDIA, ATI, E&S, Matrox, and 3DLabs, in order to push their chips and cards to do things right, not just fast.



LEGACY DATABASE SUPPORT

BARE provides the best throughput possible for legacy databases (NON-PC Visuals systems). The result is a unique art pipeline that includes pre and post-processing of source data, resulting in intelligent formatting of data optimized for efficiency, realism, and accurate rendering.

Additionally, BARE provides much better throughput on new databases specifically designed for PC visuals.

DYNAMIC DATABASE UPDATE

BARE's Dynamic Database Update feature allows BARE to run large databases and streamlined visuals that would have choked a proprietary image generator. This enables applications such as maneuver trainers to run with locked frame rates.

Any tiled database (databases designed in equal sized squares) may be run using BARE's Dynamic Database Update. Advanced preprocessing software makes it possible for the visual designer to tailor the disk space and RAM consumed by the database, as well as format the data for optimal rendering performance. Tuning capabilities provide the visual engineer the capability to control the amount of RAM used, in real-time, for geometry and textures. Load ranges can be tuned per level of detail for optimum RAM and polygon load.

ADVANCED VISUAL EFFECTS

BARE takes advantage of the full capabilities of modern video hardware, including vertex and pixel shaders, to provide exceptional realism in training applications. This functionality is provided without the complexity and expense of proprietary off-board or out-of-box devices.

Some of these capabilities include:

- Procedural animations
- Particle chains
- Night Vision /Image Intensification simulation, including blooming and smearing
- Viewport defocus
- Per-pixel, range-attenuated light lobes

