

GRAPHICS



NUCLEUS GRAFIX
WINDOWING TOOLKIT

NUCLEUS GRAFIX
RENDERING SERVICES

DRIVERS AND
FONT SUPPORT

AcceleratedTechnology.com

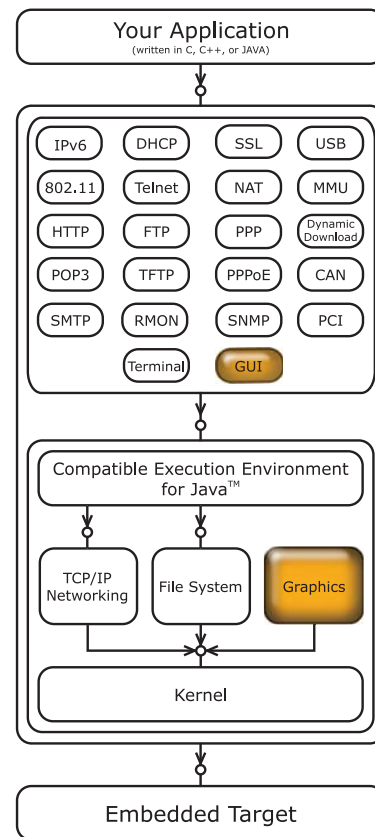
NUCLEUS

EMBEDDED SOFTWARE



Human interaction with embedded devices continues to increase. Suddenly, we have the need for embedded systems to look like traditional desktop devices with full graphical user interfaces (GUI). Set-top boxes, medical imaging equipment, factory automation equipment and mobile phones all require a sophisticated user interface, which has created quite a dilemma in the embedded market. Most GUI programs are not tailored to embedded devices and are limited by their size or performance. Nucleus GRAFIX from Accelerated Technology is **specifically** designed to provide GUI-building capabilities that meet the design constraints faced by embedded developers today.

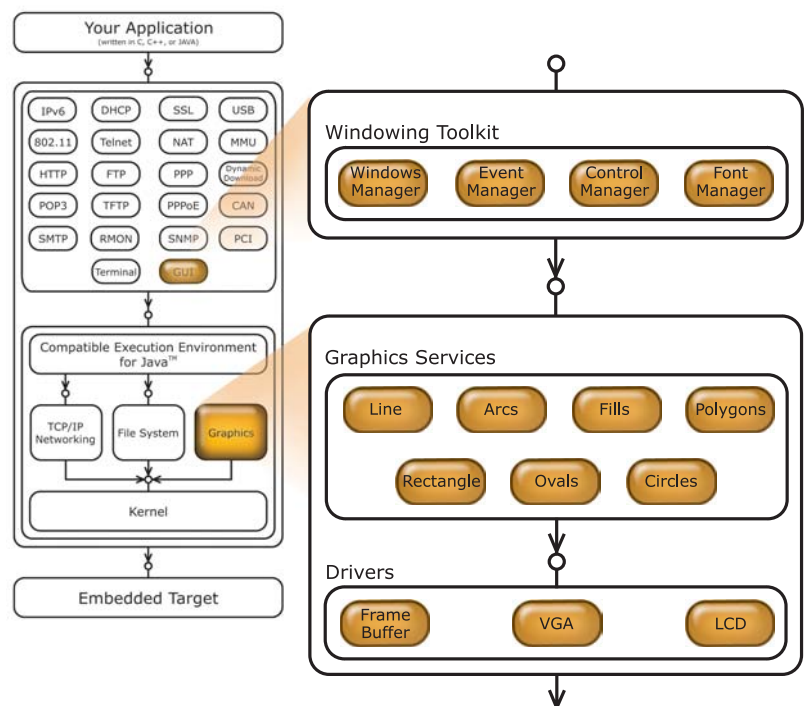
Accelerated Technology has been well known for developing embedded software for many years. We have done it successfully with kernels, networking stacks, file system, standard C libraries and other embedded software components. A Graphical User Interface (GUI) package is a natural complement to our wide offering of embedded products. Nucleus GRAFIX is a graphics package that can be used in your embedded system, regardless of your target, and can be combined with the other Nucleus products to deliver a complete solution.



WHAT IS NUCLEUS GRAFIX?

In designing Nucleus GRAFIX, our goal was to create a GUI with the features that you need. Nucleus GRAFIX contains the components commonly needed by GUI developers including text, lines, bars, pull-down menus, dialog boxes, radio buttons, scrollable windows and icons. These features allow a developer to easily and quickly build a graphical interface that is suitable for embedded devices. Nucleus GRAFIX is adaptable and can be tailored to fit many applications.

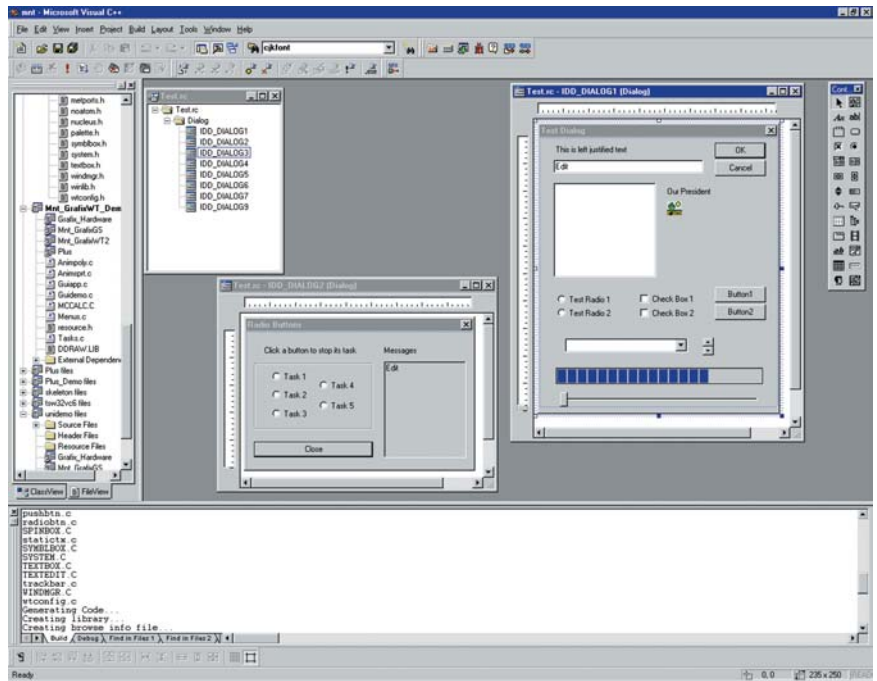
Nucleus GRAFIX is modular and highly portable and contains three parts: the Windowing Toolkit, the Rendering Services and the Device Drivers. The **Windowing Toolkit** provides the tools to build high-level human interfaces referred to as the GUI (Graphical User Interface), the HMI (Human Machine Interface), or the MMI (Man Machine Interface). The **Rendering Services** provide the facilities necessary for basic line drawing and text manipulation. This package provides the ability to draw lines, boxes, characters, and symbols, fill polygons, control the pallet and include several other useful tools for preparing a complete presentation. The **Device Drivers** provide the interface to the hardware and provide an API for the input and output on the device. Nucleus GRAFIX is proven in many designs and provides all of the functionality you would expect from a full-featured windowing package.



NUCLEUS GRAFIX WINDOWING TOOLKIT

The Windowing Toolkit (WT) provides a set of APIs so you can build your own embedded GUI/HMI/MMI. Because of the diversity of embedded systems, the interface could vary from a single window or pull-down menu to a very complex set of interacting events with numerous windows, controls, fonts and menus. WT provides the flexibility to handle these various situations to create a comprehensive interface that suits your application. The WT provides all the necessary components needed in building a GUI/HMI/MMI and provides a complete set of functionality that works together to provide a comprehensive windowing system.

The Nucleus Graftix Windowing Toolkit integration with Microsoft Developer Studio facilitates the creation of your GUI layout. This integration gives you an environment with access to Visual Studio to design your panels using Microsoft Visual Studio™ to produce a resource script. The “RC” script contains all the components you need to build a GUI for your target. The “RC” file is read and converted to a C source file that can be compiled and linked with your Nucleus GRAFIX application and executed on your target.



Nucleus GRAFIX Window Creator

WINDOWING TOOLKIT FEATURES

- Cascading Menus
- Push Buttons
- Picture Buttons
- Check Boxes
- Radio Buttons
- Combo Boxes
- List Boxes
- Text Boxes
- Static Text Controls
- Group Boxes
- Decorative Frames
- Spin Buttons
- Track Bar
- Progress Bar
- Edit Box
- Dialog Window
- Application Window
- Menu Bar
- Menu Window
- Debug Window
- Normal Window
- Horizontal and Vertical Scroll Bars
- Customizable Window
- Custom Controls
- Child Windows
- Multi-Line Text Editor
- Picture Boxes
- Grid Boxes
- Formatted text



Metrology Instrument from Taylor Hobson Limited

NUCLEUS GRAFIX RENDERING SERVICES

Because differing levels of application functionality require different levels of graphics capabilities, not every product design requires the same level of graphics functionality in a user interface. Some devices only require functionality that focuses on drawing primitives such as lines, graphs and text. Nucleus GRAFIX Rendering Services package provides this level of service. Products like industrial controllers, medical devices and instrumentation devices need some kind of display functionality, usually with some type of user input device. Nucleus GRAFIX Rendering Services provides the capabilities to draw lines, circles and text without the overhead associated with high-level GUI packages.

Nucleus GRAFIX Rendering Services has a user-friendly, easy-to-learn, intuitive interface for building your application. The package is designed to be extremely portable and is supported across a wide variety of processors. The API is designed to minimize the learning curve and is structured in an easy-to-use and easy-to-follow manner. Nucleus GRAFIX Rendering Services also has support for multiple display devices and multiple input devices. Support for text manipulation, including UNICODE, is included in Nucleus GRAFIX Rendering Services, which is important in the global market and the deployment of devices in other countries.

RENDERING SERVICES FEATURES

- 16 standard raster operations
- 16 transparent raster operations
- Automatic mouse/cursor tracking
- Bitmap text fonts
- Clipping to irregular-shaped regions
- Monochrome cursors up to 32x32 in size
- Image format translation
- Dashed line "on/off" and "double" styles
- Device, local and virtual coordinate mapping
- Dynamic text facing (bold, italic, underline, ...)
- Full-color fill patterns
- High speed convex polygon fills
- Hit detection
- Keyboard and mouse event processing
- Lines, ovals, arcs, rectangles, polygons - fill and frame
- Marker plotting functions
- Multiple windows / virtual screens
- Multi-width wide lines
- Pattern alignment
- Polygon "winding" and "odd/even" fill rules
- PostScript style line caps
- PostScript style round and square pen shapes
- Configurable line dash lengths
- Local memory image save and restore
- Region computation and drawing functions
- Rounded-corner rectangles - fill and frame
- Round-pen precision wide lines
- Scalable vector fonts
- Screen and virtual bitmap "bitblit" transfers
- Seed and boundary flood fills
- Thin line end-caps (not-first/not-last)
- User-defined cursors
- Virtual bitmaps in memory
- Zoom and scale images to any size

DISPLAY DEVICES

Nucleus GRAFIX allows support for multiple output devices including support for LCD, VGA and SVGA at multiple resolutions. With the growing LCD market, it is clear that the introduction of new controllers and devices is not going to slow down. Therefore, it is critical that a solution exists that can be easily migrated to new devices as well as custom hardware devices with minimal effort. The modular design of the driver allows for the quick adaptation to new controllers. Since the driver code base is designed for portability, supporting new controllers is very easy and requires only a few changes.

INPUT DEVICES

Interaction with the user is a requirement for graphical designs and Nucleus GRAFIX offers a wide variety of options for input. Nucleus GRAFIX supports multiple input mechanisms including a keyboard, mouse and touch panel devices. Support is built into the package to facilitate the easy introduction of new devices.

UNICODE® SUPPORT

With the expanding global market, there is a need to understand multi-national character sets. Because of this need, support for two-byte character sets and UNICODE support is built into the Nucleus GRAFIX package.

NUCLEUS TYPESERV

In any design, the storage of fonts and images can become memory intensive. In these situations, it is necessary to provide some type of off-line storage for your font files. Nucleus TypeServ is a TrueType rasterizing engine designed for use in real-time, embedded applications. Using industry-standard TrueType fonts, Nucleus TypeServ creates typeset-quality bitmap text for devices at differing sizes and resolutions. Nucleus TypeServ is designed for tight memory-constrained environments and is portable for use on a wide variety of platforms and processors. Supporting both ASCII and UNICODE character sets, Nucleus TypeServ's design makes it ideal for use in a broad selection of products needing high-quality scalable fonts and type. Nucleus TypeServ is integrated with Nucleus FILE and works with TrueType fonts stored on disk, in memory or in ROM.

THE ONLY CHOICE

When you talk about portable graphics facilities, Nucleus GRAFIX has it all. No more endless hours spent determining how to hide a window or draw a widget efficiently. Just write your application and include our services.

Nucleus GRAFIX is a full-featured, fast and proven software package that enables you to develop sophisticated user interfaces in record time. Contact Accelerated Technology for more information on the graphics package that is revolutionizing the embedded industry. Experience what Accelerated Technology has to offer you with full source code, no royalties and a focus on servicing you!

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