QuickDraw GX Product Ideas

QuickDraw GX, the new imaging architecture for Macintosh, provides advanced, system-level functionality for graphics, type and typography, printing, color management, and document portability. This document contains brief overviews of the major components of QuickDraw GX, and some suggestions about the kinds of differentiating features you can incorporate into your products by building upon QuickDraw GX.

This document contains short descriptions of the main features of QuickDraw GX, and some suggestions on how you might incorporate these features into a number of product types. For additional information, please consult the QuickDraw GX Document Portability backgrounder and the QuickDraw GX Savvy guidelines, both of which are included on the QuickDraw GX v1.0ß3 CD.

The QuickDraw GX product marketing team is working hard to create focused, solutions-based marketing programs to promote adoption of the technology. We are looking for extremely cool, QuickDraw GX-savvy products to participate in marketing and promotion efforts. We hope that these guidelines will spark your imagination, fire your enthusiasm, and help create the next generation of ground-breaking Macintosh software.

Happy coding,

The QuickDraw GX team

QuickDraw GX Graphics

People are using graphics in their work in ever increasing amounts to communicate complex ideas and information. People are creating original graphics themselves, generating them with spreadsheets and scientific analysis tools, or inputting them via low-cost scanners. Applications that can provide the advanced graphics capabilities required by their particular markets will more fully address the needs of their installed base and be more attractive to new users. QuickDraw GX allows virtually any type of application to quickly add new or additional graphical functionality.

The QuickDraw GX graphics engine provides resolution-independent, geometrical

resources to any application. The basic component of QuickDraw GX graphics is the *shape*, which can be modified by any combination of three different attributes: *style, transform,* and *ink.* QuickDraw GX shapes include points, lines, curves, paths, compound objects, bitmaps, and type. Attributes include controls over a shape's line thickness, end caps, scaling, rotation, skew, perspective, clipping, color, and transfer modes (color mixing).

QuickDraw GX Type and Typography

Low-cost, high-resolution output devices have brought the benefits of proportionally spaced type to millions of users. However, to get the best results, users are still required to understand certain typographic fundamentals and to use applications that provide high-level typographic controls. By using the QuickDraw GX Line Layout Manager and GX "smart" fonts, applications of all kinds can offer automatic, high-quality support for, among other things, glyph substitution (for automatic ligatures, for example), kerning, variations (in font weight or shape, for example), and non-Roman reading directions and baselines.

GX "smart" fonts are TrueType or Type 1 fonts with an extensive set of conditional instructions, or tables, defined by the font designer. Line Layout uses these instructions to determine how to display the font under various conditions, which glyphs to display, how to space letters, and so forth. Because type is also a first-class graphic under QuickDraw GX, a full range of graphical functions (skew, rotation, color, etc.) can be applied quickly and easily to type.

QuickDraw GX Print Architecture

Because of the wide variety of information people generate on Macintosh, their printing needs are quite varied. For example, a single business letter might require an envelope, letterhead page, second sheet, and a horizontally-printed legal page containing a spreadsheet. With the new QuickDraw GX print architecture, application developers can allow users to format their information as they wish, and output multiple page sizes and orientations within the same document file. With QuickDraw GX print extensions, developers can provide users with the means to customize the print process. This might include automatically printing "Confidential" on each page of a print job, tracking consumables and output device processing time, performing job-tracking functions, and so on.

The new print architecture consists of four parts: a new desktop-level user interface, printing extensions, document portability features (see the section on document portability), and an improved environment for creating output device drivers.

QuickDraw GX Color Management

The majority of Macintosh users have color-capable hardware and software. With low-cost color input and output devices becoming more widely available, customers will have more opportunities to work with color graphics, type, and images. Currently, to get consistent, accurate results, customers need to understand color fundamentals and theory. QuickDraw GX provides an device-independent color management architecture that can provide automatic, accurate color results from within any application. This is an important feature that can improve the quality of output from all products, ranging from high-end graphics applications to basic word processors.

The QuickDraw GX device-independent color management architecture incorporates ColorSync, Apple's device-independent color management system. The entire architecture is open, allowing users to configure the system with third-party color management methods (CMM's) to provide the level of quality that's appropriate for their work.

QuickDraw GX Document Portability

Exchanging documents electronically can speed delivery time, and reduce costs by eliminating printing and delivery costs. However, this generally requires that the author and recipient have the same applications and fonts installed on their Macintosh computers. QuickDraw GX provides two levels of portable documents that address this problem. The first, portable digital documents (PDD's), can be created by *any* application that conforms to standard Macintosh printing routines. A PDD can be opened and printed on any other QuickDraw GX Macintosh without the original application or fonts. PDD's are not editable.

QuickDraw GX also allows QuickDraw GX-aware applications to embed fonts in their documents. The recipient of such a document still needs to have the same application as the author, but not the fonts. Documents with embedded fonts are fully editable.

What can you do with QuickDraw GX?

QuickDraw GX provides all developers with opportunities to build upon a wide range of powerful, system-level technologies. This section describes by application categories those features and capabilities that Apple believes can and should be implemented based on QuickDraw GX. These features are described as they would be perceived by the user. For specific technical guidelines, please consult the QuickDraw GX savvy guidelines.

Page layout applications

Dynamic, click-and-drag manipulation of type for kerning, alignment above or below the standard baseline, etc.

Dynamic copy-fitting at all levels (word, sentence, paragraph, column, story, etc.) via multiple options such as adjusting type weight, width, size, word spacing, or a combination of type characteristics.

Interface or controls that allow users to group and name different GX font settings and apply those custom settings as styles.

Font embedding as a user option.

Multiple page sizes in a single document (bi-page formatting).

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Live, editable text on any path, curve, or polygon.

Enhanced graphics tools for creating or editing vector or bitmap graphics in the page-layout document.

Dynamic and numeric rotation, skew, perspective, resizing of any page element in any increment.

Color blending, or transfer modes, that can be applied to all page elements.

Support for ColorSync as well as user-selectable control of color management methods (CMM’s).

Automatic, high-quality trapping functions.

Print preview that displays registration marks, bleeds, trapping, spot colors, varnishes, final imposition, etc.

User definable, multiple, dynamically updated document views. Show the work as it would appear in grayscale, at low resolution, output in CMYK, etc.

Dynamic page view reduction or magnification.

Framing and dashing for any kind of object or object frame.

Print-through of QuickTime movies to portable digital documents (PDD’s).

Support for PostScript synonyms (rasterizing a page element once, even if it appears in multiple places in the document).

Provide AppleEvents suites for interapplication communication (for example,

double-click on a scanned image and bring up the original scanning application).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Vector graphics applications

Real-time color blending (transfer modes) for any graphic object.

Tools for creating resolution-independent, geometrically correct end caps, line joins, custom fill and dash patterns, etc.

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Live, editable text on any path, curve, or polygon.

High-level graphical manipulation of type (transfer modes, type along curves, clipping type to other graphics, perspective, skewing, rotation, etc.).

Color blending, or transfer modes, that can be applied to all page elements.

Support for ColorSync as well as user-selectable control of color management methods (CMM's).

Automatic, high-quality trapping functions.

Print preview that displays registration marks, bleeds, trapping, spot colors, varnishes, etc.

User definable, multiple, dynamically updated document views. Show the work as it would appear in grayscale, at low resolution, output in CMYK, etc.

Support for PostScript synonyms (rasterizing a page element once, even if it appears in multiple places in the document).

Provide AppleEvents suites for interapplication communication.

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Image manipulation (raster-based) applications

Real-time color blending (transfer modes) for any graphic object.

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Support for ColorSync as well as user-selectable control of color management methods (CMM's).

Object layers to facilitate working with components of complex images.

Color blending, or transfer modes, that can be applied to all page elements.

Support for automatic color management as well as user-selectable control of color management methods (CMM'S).

Print preview that displays registration marks, bleeds, etc.

User definable, multiple, dynamically updated document views. Show the work as it would appear in grayscale, at low resolution, output in CMYK, etc.

Provide AppleEvents suites for interapplication communication.

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Presentation applications

Automatic, high-quality type via support for Line Layout Manager and GX fonts.

Dynamic text and titles, via animated GX fonts designed for presentations, or by treating type as a graphic and modifying it over time.

Dynamic, click-and-drag manipulation of type for kerning, alignment above or below the standard baseline, etc.

Dynamic copy-fitting at all levels (word, sentence, paragraph, column, story, etc.) via multiple options such as adjusting type weight, width, size, word spacing, or a combination of type characteristics.

Interface or controls that allow users to group and name different GX font settings and apply those custom settings as styles.

Font embedding as a user option.

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Live, editable text on any path, curve, or polygon.

Support for ColorSync to maintain consistency between monitors and color foil and paper output.

Enhanced graphics tools for creating or editing of vector or bitmap graphics in the presentation files.

Dynamic and numeric rotation, skew, perspective, resizing of any page element in any increment.

Color blending, or transfer modes, that can be applied to all page elements.

Framing and dashing for any kind of object or object frame.

Print-through of QuickTime movies to portable digital documents (PDD's).

Generate PDD's (and/or create a presentation viewer) that maintains specific aspect ratios or screen sizes.

Read or input PDD files (from a spreadsheet, for example) as slides in a larger slide show.

Provide AppleEvents suites for interapplication communication (for example, double-click on a scanned image and bring up the original scanning application).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Animation applications

Convert sprites into dynamic, animated fonts (for use in presentations).

Provide a completely object-oriented animation environment.

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Live, editable text on any path, curve, or polygon.

Support for ColorSync as well as user-selectable control of color management methods (CMM's).

Dynamic and numeric rotation, skew, perspective, resizing of any movie element in any increment.

Color blending, or transfer modes, that can be applied to all movie elements.

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Word processors

Automatic, high-quality type via support for Line Layout Manager and GX fonts.

Dynamic copy-fitting at all levels (word, sentence, paragraph, column, story, etc.) via multiple options such as adjusting type weight, width, size, word spacing, or a combination of type characteristics. Provide fit-to-column and fit-to-page controls.

Interface or controls that allow users to group and name different GX font settings and apply those custom settings as styles.

Font embedding as a user option.

Multiple page sizes in a single document (bi-page formatting).

Enhanced graphics tools for creating or editing vector or bitmap graphics in the document.

Live, editable text on any path, curve, or polygon.

Dynamic and numeric rotation, skew, perspective, resizing of any page element in any increment.

Support for ColorSync color management.

Framing and dashing for any kind of object or object frame.

Print-through of QuickTime movies to portable digital documents (PDD's).

Provide AppleEvents suites for interapplication communication (for example, double-click on a scanned image and bring up the original scanning application).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Spreadsheets

Automatic, high-quality type via support for Line Layout Manager and GX fonts.

Advanced charting and plotting functions that use transparency, perspective, type rotation, etc. to generate clearer, more accurate graphs.

Live, editable text on any path, curve, or polygon.

Color blending, or transfer modes, that can be applied to all page elements.

Support for ColorSync color management to maintain accurate color.

Font embedding as a user option.

Multiple page sizes in a single document (bi-page formatting).

Dynamic and numeric rotation, skew, perspective, resizing of any page element in any increment for fine-tuning the appearance of charts and graphs.

Print-through of QuickTime movies to portable digital documents (PDD's).

Provide AppleEvents suites for interapplication communication (for example, double-click on a scanned image and bring up the original scanning application).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Database

Automatic, high-quality type via support for Line Layout Manager and GX fonts.

Font embedding as a user option.

Create PDD files of sorted data that can be viewed, sorted, and printed without the original data files.

Easier, more accurate formatting and printing of reports (label types, horizontal and vertical type in same document, etc.).

Import and output all GX graphics types (bitmap, vector, etc.).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Technical/CAD

Support for output on plotters and other output devices.

Real-time color blending (transfer modes) for any graphic object.

Automatic, high-quality type via support for Line Layout Manager and GX fonts.

Tools for creating resolution-independent, geometrically correct end caps, line joins, custom fill and dash patterns, etc.

Import/export data in GX format for inclusion in and output from any type of application (word processor report, spreadsheet chart of costs, etc.).

Treat type as a graphic object, allowing users to apply masking, color, rotation, skew, perspective, etc. as they would be able to do with any other graphic.

Live, editable text on any path, curve, or polygon.

High-level graphical manipulation of type (transfer modes, type along curves, clipping type to other graphics, perspective, skewing, rotation, etc.).

Advanced charting and plotting functions that use transparency, perspective, type rotation, etc. to generate clearer, more accurate images.

Font embedding as a user option.

Multiple page sizes in a single document (bi-page formatting).

Color blending, or transfer modes, that can be applied to all page elements.

Support for ColorSync as well as user-selectable control of color management methods (CMM's).

User definable, multiple, dynamically updated document views. Show the work as it would appear in grayscale, at low resolution, output in CMYK, etc.

Support for PostScript synonyms (rasterizing a page element once, even if it appears in multiple places in the document).

Print-through of QuickTime movies to portable digital documents (PDD's).

Provide AppleEvents suites for interapplication communication (for example, double-click on a scanned image and bring up the original scanning application).

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Games

Resolution-independent, object-based screen images for accurate presentation on any size display.

More accurate transparency, object interaction, color, etc.

Font utilities

Full customization of kerning, tracking tables.

Convert bitmap fonts to GX sfnt format.

Control over aspects of feature sets and glyph sets.

Create unique, custom characters.

Create and/or adjust font axis.

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).

Fonts

Fonts with specific functional uses:

Presentation font that appears in headline weight at the top of a slide, and in appropriate weights and styles depending upon indentation.

Page layout fonts that set themselves at proper weights (body copy, section

head, chapter head, headline) depending upon the number of returns preceding or following the copy.

Rebus fonts that display special glyphs, icons, pictures, or logos when certain character combinations are typed. For example, typing “Apple logo” could automatically display the logo, in the text, at the proper size.

Scientific and mathematical fonts. A chemistry font (akin to a rebus font) could allow you to type a chemical name (“methyl alcohol”) and get a picture of the molecule. A mathematical font could automatically set and adjust the size and shape of mathematical signs, fraction bars, superscripts, subscripts, italics, etc. as the formula is typed.

Handwriting fonts with randomization to provide irregularities found in actual handwriting.

Animated fonts designed for screen display.

Extensive spacing and kerning information to provide high-quality, properly-spaced results over a wide range of point sizes and character combinations.

Automatic ligature substitution for an extended set of character combinations (ae, oe, ct, fb, ff, ffi, ffl, fh, fi fk, fl gg, gi, gy, ll, sp, st, AE, OE).

Automatic fractions (*n* over *y* as compared to pre-built characters)

Correct, automatic superscripts and subscripts (™,)

Ordinals (1st, 2nd, etc.)

Correct small caps

Old-style numerals

Tabular figures (monospace)

Swash characters (for serif faces)

Two axis fonts (an axis might include weight, ornateness, color, slant, outline thickness, appearance randomization, etc.)

Printing extensions

Stationery (letterhead, form letters with blanks for mail merged data, the words “confidential” or “shred” on each page)

Automatic billing of consumables and print processing time to clients via triggered AppleScripts.

Imposition, trapping, separations, and other soft previews for high-end publishing.

Security and authentication.

Print job routers (automatically choose printer based on paper size, choose printer based on length of job queue, etc.).

Toner controls (use less toner on draft versions of documents)

Job tracking and updating.

Deferred printing.

Portable digital document (PDD) Viewers

Presentation viewer with slide show controls (forward, backward, transitions between pages).

Annotator viewer with comments layer.

Viewer with full-text search capabilities.

Viewer to extract font name and spacing information.

Viewer preview of trapping, imposition, separations.

Non-GX system PDD creator/viewer.

Color management methods (CMM's) and tools

Custom profile builders (users can calibrate their own devices).

Support for additional color spaces.

Scanners and input devices

Improved, intuitive scanning size controls (scan to fill horizontally and vertically, scan to fill while maintaining horizontal or vertical aspect ratio, etc.)

Save color profiles with scans.

Supply product-specific enhancements through printing extensions (see section on Printing Enhancements below).