
Mac OS X and PDF

The Real Story

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pdf
SAGES

Overview

- Mac OS X
- PDF
- Where's the overlap?

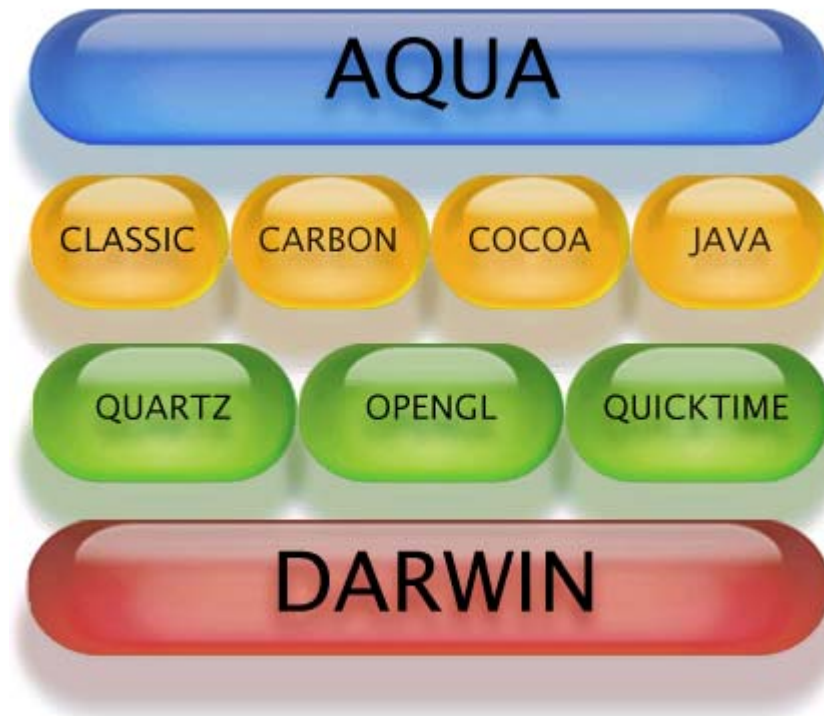
You are here because...

- You're currently working with Mac OS and are interested in what Mac OS X brings to the table.
- You're curious about what Apple's latest hype is all about.
- You're already awake and had to find something to kill time.
- You're a friend of mine and wanted to heckle

How I do things

- You should all have copies of the presentation that you received when you walked in.
- There is also an electronic copy of this presentation (PDF format, of course!) on my website at <http://www.pdfsages.com/>
- I've left time at the end for Q&A, but please feel free to ask questions at any time!

Mac OS X Overview



Darwin

- “Core OS” (Kernel)
 - Solid Unix foundation
 - FreeBSD 3.2 & Mach 3.0
 - Memory protection, preemptive multitasking, etc.
 - High performance I/O
 - Firewire, USB, etc.
- Open source



Graphics

- Quartz
 - Adobe Imaging Model (PDF)
 - Includes full anti-aliasing and opacity/transparency
- OpenGL
 - Industry standard 3D engine used by Quake & Maya
- QuickTime



Graphics Demos - Quartz

Graphics Demos – OpenGL



Application Frameworks

- Classic
 - Compatibility “box” for existing Mac OS applications.
- Carbon
 - Modern versions of Mac OS applications prepared for Mac OS X.
- Cocoa
 - Completely new applications written using a modern object-oriented framework in either Objective-C or Java.



Aqua

- New and improved User Interface & Experience for Mac OS X
 - Aqua brings your Mac to life with color, depth, translucence and fluid motion.
 - The new controls resemble polished gems.
 - Buttons indicate active or nonactive status by glowing and dimming.
 - Icons are crisply rendered at up to 128x128 pixels in size.
 - Drop shadows give windows greater depth.



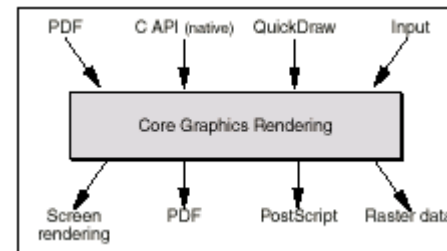
Aqua Demo

Quartz in Depth

- Quartz Compositor
 - device-independent color and pixel depth
 - remote display
 - layered compositing (per-pixel mixer)
 - double buffered windows
 - System-wide ColorSync integration
- Quartz 2D
 - 2D vector library based on Adobe Imaging Model

Quartz 2D

- Quartz 2D enables a number of important features for (modern) applications
 - Best 2D graphics system of ANY OS
 - high-quality screen rendering
 - automatic on-screen preview of graphics (WYSIWYG?)
 - Integration with PDF
 - “Save as PDF”
 - disk and clipboard
 - “Import PDF”
 - Conversion of PDF’s
 - raster data or PostScript



Quartz 2D & Printing

- Printer “Spool Files” are PDF files
- Print Preview for all (modern) applications
 - Works by simply bringing up the spool file in the default PDF viewer (usually Preview)
- PDF-based rendering
 - providing PDF capability for all printers, including inexpensive raster printers
- PDF to Postscript conversion

PDF Overview



PDF - What's in there?

- PostScript/Adobe imaging model
 - Text & graphics in a device & resolution independent manner
- Bitmap Images
- Annotations
 - Text notes, Hyperlinks, Annotations, Movies, Sounds & Widgets
- Forms

Adobe Imaging Model

- Same model as Postscript, where a page is drawn by “placing paint” on a selected area
 - “Figures” can be letter shapes or regions defined by lines and curves (paths) or sampled images
 - Paint can be any color (in any color space)
 - Transformations (scale, rotate, skew, translate)
 - Figures can be clipped to any other figure/shape
 - Figures are “overlaid” on each other, in the order they exist in the page description.
- PDF 1.4 includes transparency/opacity

Fonts

- The following types of fonts are supported
 - Type 1
 - Type 3
 - TrueType
 - Type 0
 - CIDFont Type 0 & 2
- There are 14 fonts that are “built-in”, including the Courier, Helvetica and Times families, Symbol & ITC Zapf Dingbats.

Color Spaces

- PDF Supports 11 color spaces
 - 3 device dependant
 - DeviceGray, DeviceRGB & DeviceCMYK
 - 4 device independent
 - CalGray, CalRGB, Lab & ICCBased
 - 4 special
 - Indexed, Pattern, Separation & DeviceN

Patterns

- Two types

- Tiling

- A sequence of explicit marking instructions which are repeated once per tile



- Smooth shading

- Description of the desired effect in terms of transitions between colors across a certain area



- All patterns are treated as colors

Images

- PDF support a number of different types
 - Image masks
 - Grayscale images (1, 2, 4, & 8 bit)
 - Color images (1, 2, 4, & 8 bits per component)
 - Number of components is determined by color space
- Images are usually either in JPEG or TIFF formats or an array of "pixel data"

Form XObject

- A form xobject is kind of like a Mac OS PICT or Windows Metafile. It's a named self-contained description of text, graphics or sample images that can be drawn more than once on a single page, or on multiple pages.

Annotations

- Text Notes
- Markup
 - Underline, strikeout, highlight
 - Circle, Rect, Pen/Scribble
- Hypertext Links
 - Inter-document, intra-document
 - URI's
- Movies
- Sounds
- Widgets



V Information Age Insecurity

The Information Age is increasingly altering the means by which the Government must approach the challenge of protecting its information. Protection no longer equates to placing documents in filing cabinets with strong combination locks. Instead, information vital to the security and essential property of the United States resides in a series of increasingly interconnected, classified and unclassified systems. The Commission believes that the findings and recommendations noted below provide policy-makers the means to begin protecting information properly now and for the next century.

This is an era of tremendous change not only in information technology, but also in the way we think and act. It is time to think and act differently. The Commission's goal is not to predict the future, but to help us think about the future differently. Rather, it is to better understand the current situation and the challenges we face, with the full support of the private sector, our citizens, and the Government.

At present, there exists what appears to be a growing gap between technological change and the human capacity to adapt to that change. The risk is that the Government will make bad decisions not because it has too little information, but rather because it has too much information about the wrong things. In such a rapid-paced and changing environment, it is overly burdensome to hold back on old issues, protocols, and standards. For instance, as Wernicke once noted, one is "never allowed to quarrel with the flow."

Federal Government Information Security and the National Information Infrastructure

The information revolution, characterized by the growing convergence of computer and communications technologies, requires a fundamental rethinking of traditional approaches to safeguarding national security information. Those responsible for the protection of national security face new, increasingly difficult challenges presented by the proliferation of computer networks linked by telephone lines, cable, Internet-based e-mail services, and wireless communications, and by the replacement of the traditional computer mainframe by personal computers. In this new electronic world—the National Information Infrastructure (NII)—that is symbolized by the rapidly growing global Internet, it is not clear what responsibilities the Federal Government has to protect the infrastructure that stores, carries, and transmits nearly all of the Government's unclassified and classified information.

The NII within the **Internet** is only one portion of the Global Information Infrastructure (GII) that connects public and private computer networks around the world. For the Federal Government to assume a leadership position in protecting the NII,

Actions

- These are things that can be attached to certain objects/events in a document
 - Open doc, close doc, view page, mouse enter/leave, annotations, form elements, etc.
- They come in a few types:
 - GoTo, GoToR(emote), URI
 - Launch
 - Sound, Movie
 - JavaScript

AcroForms

- There a number of predefined field types
 - Button (checkbox/radio/push)
 - Text
 - Choice (popup, combo or list)
- Fields can be typed (integer, string, boolean) and marked read-only.
- Fields can be “calculated”, such that a JavaScript will be auto-executed when a “related” field is modified.

Other things

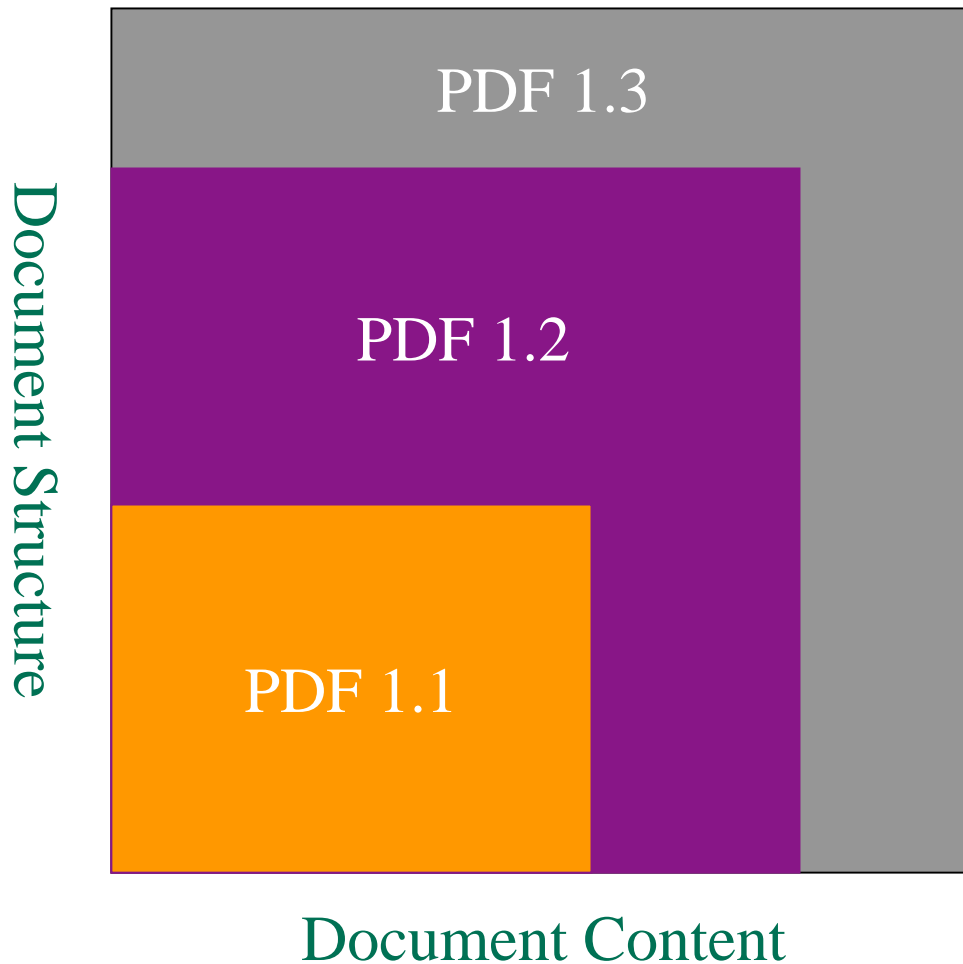
- Bookmarks
- Embedded Files
 - You can embed an entire file (of any type!) inside a PDF document
- Structured/Tagged PDF
 - Allows for storing information about the logical structure of a document along side the layout.
- MetaData
- Security & Digital Signatures

Where's the overlap?

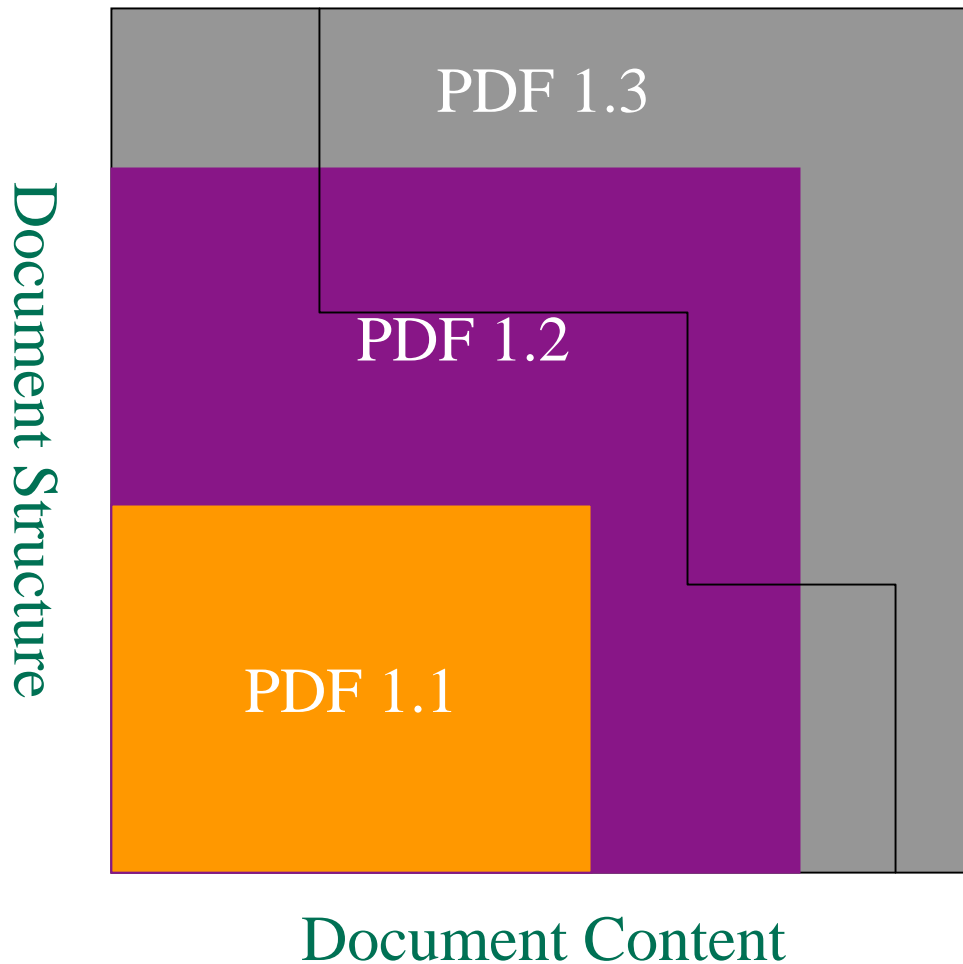
Apple's PDF Philosophy

- The Adobe Imaging Model matches what professionals see on screen and in print
- PDF is an existing cross-platform standard that can be used to record & playback all of the imaging aspects of the AIM
 - In other words, it's the replacement for PICT
- It's more important that Grandma be able to send her files to friends and family, than the professional can send files to press.
 - Consumer-level PDF

Quartz's level of PDF support



Quartz's level of PDF support - 2



Quartz's level of PDF support - 3

- PDF 1.2+ (or 1.3-)
 - No high-end prepress features (trapping, overprint, knockout, etc.)
 - No color separations
 - No smooth shading (gradients)
 - Limited support for RTL (right to left) languages
- A little PDF 1.4 throw in for good measure
 - Opacity

Quartz's level of PDF Support - 4

- All fonts are subset
 - In order to solve the CJK embedding problem, they generalized the solution for all text
- All objects are described with ICC profiles
- Streams are compressed

Quartz's level of PDF Support – 5

- As of 10.1, no “DocInfo” to identify OS X generated documents
- Whatever the producing application “records” is what you end up with. There is no “post processing” ala Acrobat Distiller
 - NO linearization (“Fast Web View”) support
 - NO “optimization” support
 - Duplicate font & image elimination
 - NO image downsampling

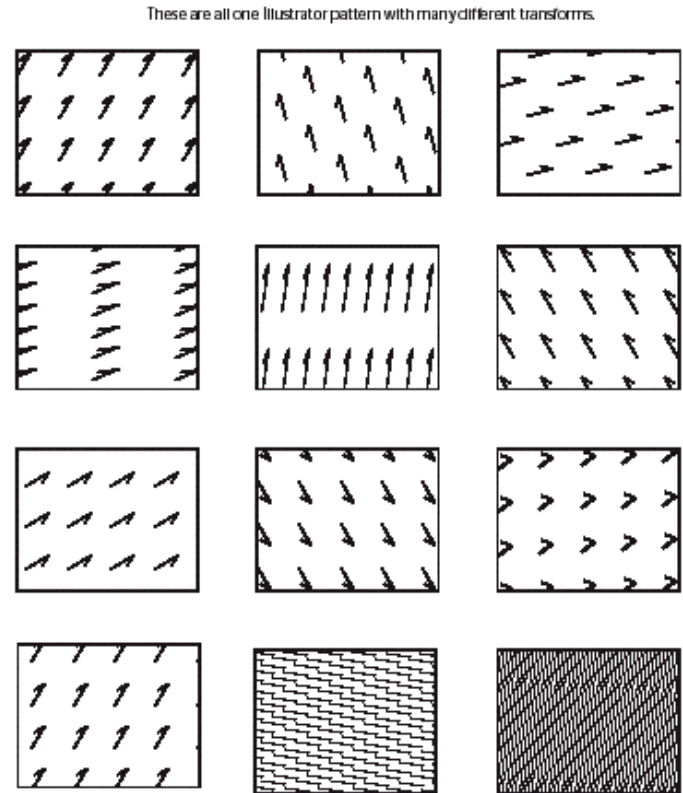
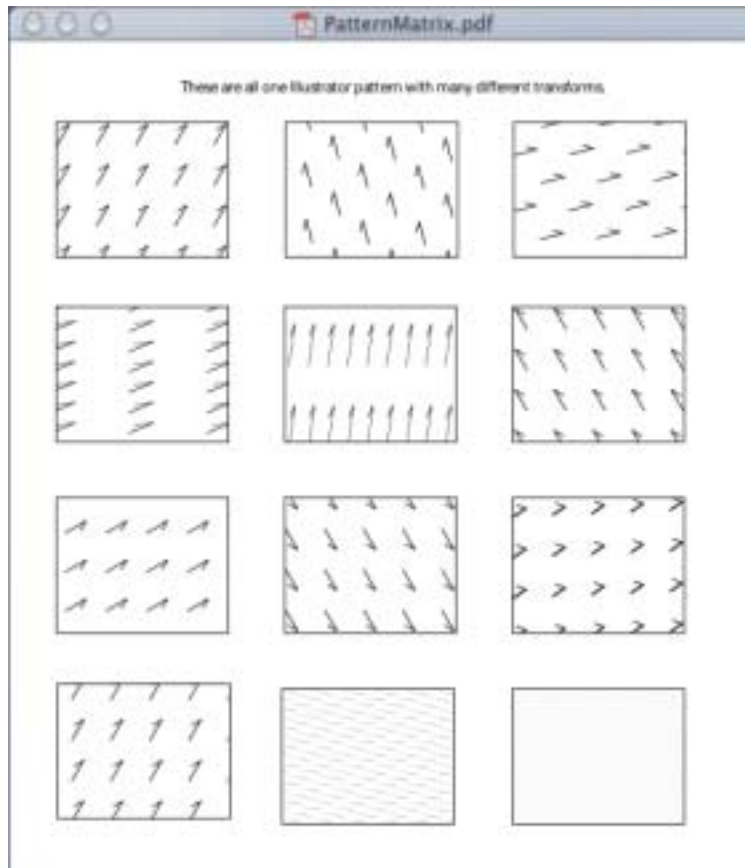
PDF support, in detail

PDF Feature	Yes	No	Comments
Adobe Imaging Model	✓		
Embedded Fonts	✓		
Color Spaces	✓		No Smooth Shading
Patterns	✓		Not 100%
Images	✓		
Prepress Features		✗	
Form XObjects	✓		
Annotations & AcroForms		✗	
Actions		✗	
Bookmarks		✗	
Embedded Files, Structure		✗	
Security & Digital Signatures		✗	

Some Examples



Example 1 – Patterns



Example 2 – Spot Color



Welcome to the Sage test file



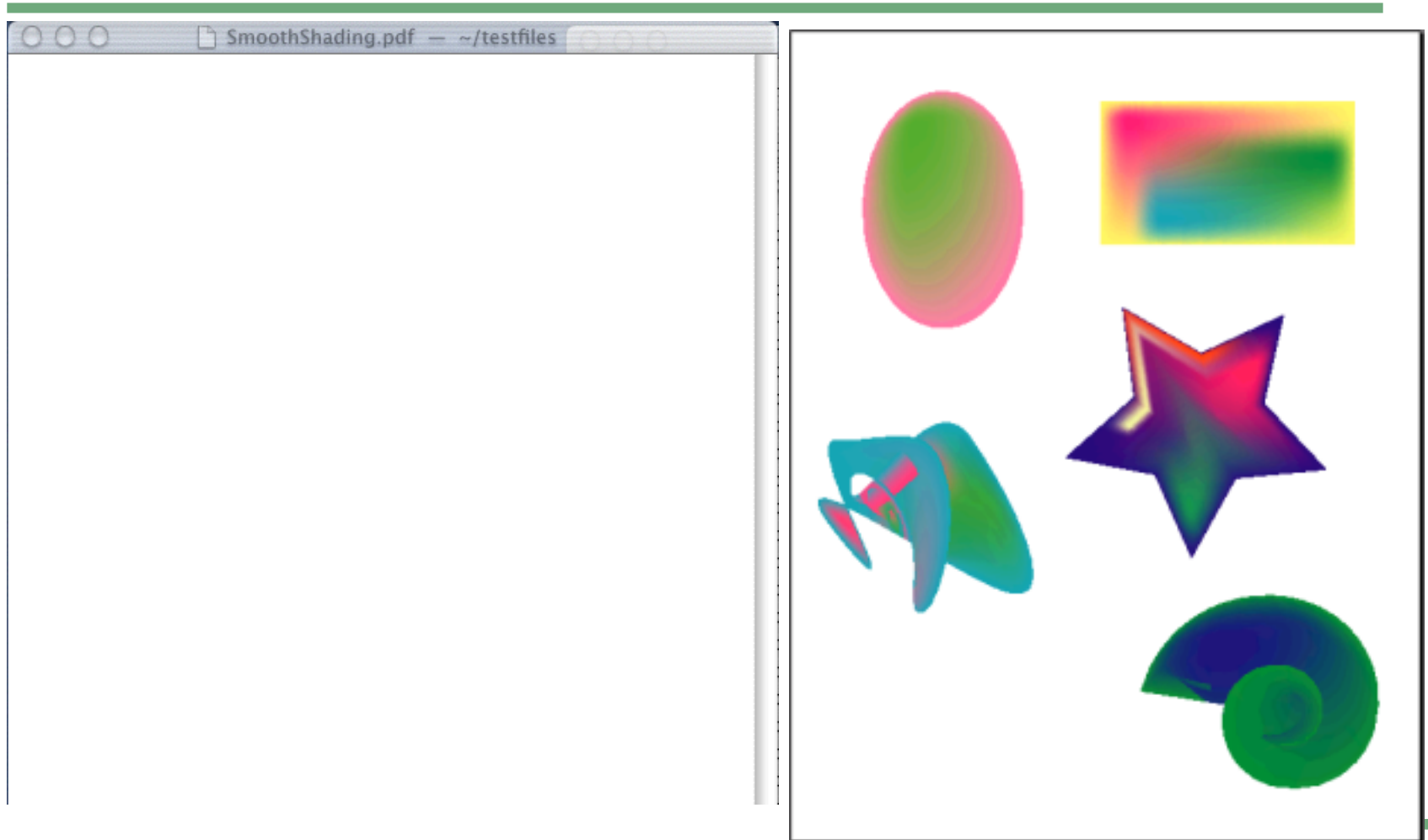
Custom tint on a spot color



Welcome to the Sage test file

Custom tint on a spot color

Example 3 – Smooth Shading



Example 4 - Annotations



What does it all mean?

- It means that PDF is going to become a VERY popular format for people to exchange documents.
 - Including a LOT more PDF's on the web
 - unfortunately, they won't be "smart" (links, bookmarks, etc.)
- It means that professional publishers don't really care about Quartz
 - They aren't going to really get any benefit from it and it may even cause them problems with customers sending in non-press ready documents!
- It means that Mac OS X users may not actually get the full meaning/experience of your documents
 - if it uses features not supported by Quartz.

Conclusion/Wrap Up

- It's going to be an interesting year for PDF!
- Mac OS X has a lot of potential, both in general and especially for bringing PDF even more into the “mainstream”.
- People already involved in PDF “solutions” are going to find that working with Mac OS X users will complicate things.

Q & A

