Choose the right set of software tools for your desktop publishing (DTP) projects.

This analysis reviews industry requirements and PostScript compliance, and will help you determine which program is right for your publication.

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NOTE: This is a DRAFT copy. New editions of Framemaker, InDesign and QuarkXpress are being evaluated at this time and will be complete by June 1st, 2002. Therefore, their evaluations in the comparison table section of this document are preliminary.

See www.pubcom.com/resources.htm for the latest version of this analysis.

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Executive Summary

This analysis of software for desktop publishing examines several industry-standard programs and evaluates how effective their tools are for creating different types of publications. **These are the key factors evaluated:**

1. Compliance with the printing and graphic arts industry’s standards and requirements.
2. Suitability for sending electronic files through US GPO’s procurement process.
3. Appropriate tools for general desktop publishing and long-documents.

**INDUSTRY REQUIREMENTS**

Understanding what happens to electronic files (whether sent through government procurement channels or through the private sector) is central to selecting the most appropriate and efficient desktop publishing layout program.

All desktop publishing files are processed by the print shop through a **PostScript imagesetter**, a high-resolution (1200dpi – 4800dpi) laser device that images the page layouts onto film. The page films are then burned into printing plates to print the publication.

Although this sounds like a straightforward process, it actually has the most chance for technical problems that cause substantial time delays and cost overruns. **Avoiding these problems is critical and requires strict adherence to the printing industry’s technical requirements.**

When electronic files are received at the print shop, the shop’s internal service bureau preflights and reviews the files for compliance with industry standards. The files are also adjusted to meet the printed job’s requirements. Some of the adjustments that print shops make are:

- **Trapping**—when two ink colors touch
- **Creep**—adjusting pages to accommodate binding
- **Imposition**—setting up of 4 or more pages into flats for printing plates
- **Dot gain**—allowance for “fattening” of halftone dots in photographs
- **Line screen**—the type and resolution of halftones
- **Bleed**—when items print to the edge of the page
- **Color separations**—creating a separate film for each color of ink on each page

If the electronic files are not prepared correctly, the print shop will not be able to set these technical adjustments and your job will either be printed at a lesser quality, or you’ll incur a substantial amount of additional charges for the print shop to create a workaround solution. Also, the print shop most likely will not be able to meet its
original deadline for the finished printed publication. And worse, your files might not be able to be output to film at all.

Therefore, it’s imperative to maintain industry compliance during desktop publishing and production of publications. It will help keep your publications on budget and on schedule.

**POSTSCRIPT COMPLIANCE**

Since the late 1980’s, the printing and graphic arts industry has standardized on the **PostScript** language throughout production.

PostScript is a computer programming language that was created specifically for the printing and graphic arts industry. Without it, we can’t do desktop publishing. **It’s a page description language** that describes the visual layout of a page ... i.e., the photo is 4 x 5 inches and positioned at x-y 100-120, text column begins at x-y 50-72, PostScript font ITC Garamond is used, PANTONE ink color 315 is specked for headlines, etc.

**PostScript is what makes desktop publishing work.** There is no other computer language that does **ALL** the things that we in graphic arts need to do — describe pages, fonts, vector graphics, printing ink colors (PANTONE and CMYK), film separations, 1200–4800 dpi resolutions, knockouts/overprints, layers of objects, transparency, trapping of colors, and all the other specs for hi-res printing and graphics.

And because PostScript is our industry’s standard language of communication, everyone in the chain of production must use PostScript throughout the process in order for it to work — desktop publishers, illustrators, and the print shops/service bureaus that output the film for printing plates all speak one common language, PostScript.

**The five areas of PostScript compliance are:**

1. Use a **genuine Adobe PostScript printer** (laser or inkjet) to review your layout pages from the desktop publishing software program. Otherwise what you see is NOT what you’ll get at the service bureau when they output film. At the service bureau, the text will reflow substantially on their PostScript imagesetter, and graphics may not image correctly.

2. Use **PostScript fonts**, not Truetype, unless you know for sure that your service bureau can accept Truetype fonts. However, because of the bidding and procurement process for government agencies, it’s unlikely that you’ll know which print contractor will receive your job and whether or not they can handle TrueType fonts.

3. Use **PostScript layout programs** to create your documents. The compliant desktop publishing layout programs are:
   - Adobe PageMaker
• Adobe InDesign
• Adobe FrameMaker
• Corel Ventura
• QuarkXPress

4. Always use PostScript graphics programs for vector illustrations (such as pie charts, logos, maps, and clip art illustrations). The compliant programs are:
   • Adobe Illustrator
   • Macromedia Freehand
   • CorelDraw

   Vector graphics must be saved in EPS or Encapsulated PostScript format before being imported into the desktop publishing layout program.

5. Bitmapted images, such as photos, must be in TIFF format, use the CMYK or grayscale color space, and be set to the proper resolution for your publication (usually 300 dpi). The software programs used to create this type of graphic are:
   • Adobe Photoshop
   • Corel PhotoPaint

   Our industry has to be pretty strict about these standards...the group of files that make up a publication just won't be able to be output to film by the imagesetter, nor color separations made, if they’re not PostScript compliant throughout.

   Desktop publishing mistakes are costly. You pay for bad film caused by your mistakes, lack of knowledge of the industry’s requirements, or incorrect files, and since film costs $8-$10 per film (one film per color per page), you could pay a hefty price for incorrect film.

   Take a 100-page book with two inks and the price tag is 100 pages x 2 ink colors x $10 per film = $2000 worth of film. If that film is incorrect, none of it can be salvaged, and your desktop publishing files must be reworked, corrected, and then re-output at an additional cost of $2000.

SOFTWARE PROGRAMS

The desktop publishing layout programs that are compared in the accompanying table are those that are PostScript compliant and meet the industry’s requirements:

• Adobe PageMaker
• QuarkXPress
• Adobe InDesign
• Corel Ventura, and
• Adobe FrameMaker.
It’s important to note why several programs were not included.

**Word processing software**, such as MS Word and Corel WordPerfect, do not meet the industry’s requirements. Neither do **Microsoft Publisher, Excel, Powerpoint, TeX, or LaTeX**. Their technical limitations are:

- Not PostScript compliant
- Can’t be output to film on PostScript imagesetters
- Can’t designate printing ink colors (PANTONE and CMYK)
- Can’t create film separations for individual color printing plates
- Can’t be adjusted by the print shop’s service bureau to meet its technical settings for trapping, imposition, dot gain, etc.

A few print shops in the Washington, DC area have developed workarounds for word processing and Publisher files and they are able to output those files to film, but generally the “solutions” involve low-quality PDFs or scans of every page. Color separations must be done by hand and are often impossible to do at all. This workaround works only if the job is one color, such as black ink, or depending upon the design of the publication, two or three spot colors.

TeX and LaTeX are used primarily by the academic community and private publishers that have set up a relationship with a dedicated print shop that has developed a specific workaround for their publication. Again, this often involves low-quality PDFs or scans, and page imposition and color separations are generally done by hand.

The US GPO procurement process uses commercial print shops around the country, and we’re told that none are able to output files from TeX and LaTeX.

If, however, you will be duplicating your publication on a laser printer, photocopier, or Xerox Docutech and are not going to have it offset printed, these office software programs may be sufficient for your needs.

**GOVERNMENT PROCUREMENT**

Because your agency’s publications will be bid and awarded through GPO’s procurement process, adherence to the industry’s standards is critical. The procurement process usually follows these steps:

1. The agency or department produces the publication.
2. The agency’s print procurement specialists and GPO customer representatives review the job and write its technical description for the RFQ.
3. GPO puts out an FRQ to the commercial printing industry.
4. GPO reviews the bids that come in and selects an appropriate print contractor.
5. GPO writes the final contract and submits it with the electronic files and artwork to the print contractor.
6. Print contractor prints and delivers the job.
Since all jobs are printed through outside commercial print shops, electronic desktop publishing files must meet the printing industry’s requirements. Keep in mind that the federal government makes up less than 10% of the entire US printing market; therefore, government publications must meet the same industry standards as private sector publications.

When electronic files are not compliant with the standards, the pool of print contractors that can bid on, output, and print your publication is narrowed. For example:

- Over 90% of private sector publishers are professionals who use Apple Macintosh computers for desktop publishing, so virtually every service bureau in the US has standardized on Macintosh and can receive and process files from Macintosh-based desktop publishers. However, when government publishers use Windows-based software for desktop publishing, the number of service bureaus that can process these files is drastically cut. Therefore, the pool of print shops that can bid on Windows-based publications is reduced to only about 15% of all print shops in the US.

- The vast majority of publishing jobs in the US are desktop published using either Adobe PageMaker, QuarkXPress, or Adobe InDesign, so virtually every service bureau can process files from these programs. However, when other programs are used, such as Adobe FrameMaker or CorelVentura, there is a smaller pool of print shops that can bid on and process publications made with these software programs. (Luckily, many of these service bureaus are in the Washington, DC area.)

- When non-compliant software is used, such as word processing, MS Publisher, TeX or LaTeX, the pool of bidders dwindles to virtually nil. GPO has a difficult time finding print contractors for these jobs.

- All of the industry’s imagesetters are PostScript devices, so they can output files that use PostScript fonts. However, when a desktop publisher uses TrueType fonts (a type technology that conflicts with PostScript), again the pool of print shops that can bid on these publications is reduced to only about 15% of all print shops in the US. And if the desktop publisher uses a combination of both PostScript and TrueType fonts in the publication, the pool of bidders is reduced to only those print shops with the newest top-of-the-line imagesetters (about one year old); only a very small number of print shops have this equipment.

Note: the statistics cited above are from our conversations with print shops, service bureaus, and GPO representatives. At this time, there is little hard data, only people’s experiential data.
SOFTWARE COMPARISON

No one desktop publishing layout program does everything well.

Some programs have specialized tools for long documents and tabular
material, while others have specialized tools for design-intensive publications,
magazines, and brochures.

As we evaluated the tools of the five desktop publishing layout programs
(Adobe PageMaker, QuarkXPress, Adobe InDesign, Corel Ventura, and Adobe
FrameMaker), we categorized the tools by key features needed for different types of
publications. Those features are:

- **Features for Basic DTP** — type control, master pages, layout and design,
preflighting files before sending them to a service bureau, and
electronic distribution (including Internet technologies).

- **Features for Books, Multi-chapter Publications, and
  Long Technical Documents** — footnotes, endnotes, generate tables of
  content and indexes, cross-referencing, management of multiple
  chapter files, centralized stylesheets.

- **Features for Tabular Material** — importing from various data sources,
  controlling the layout of tabular material.

A detailed list of these features precedes the comparison table on page 10.
CONCLUSION

A company or agency’s publications generally fall into three distinct categories:

1. **Basic desktop publishing**
   *flyers, brochures, magazines, newsletters, small booklets*
   Use any of these three desktop publishing programs:
   - Adobe InDesign
   - Adobe PageMaker
   - QuarkXPress

2. **Short multi-chapter books & booklets;**
   *short publications with tabular material, endnotes, simple indexes*
   *annual reports, shorter technical publications and books*
   Use either of these two desktop publishing programs:
   - Adobe InDesign ver. 2
   - QuarkXpress ver. 5 (no footnotes or endnotes)

3. **Long technical publications with many chapters;**
   *publications with lots of tabular material, indexes, footnotes, customized running heads, cross-references, and tables of content.*
   Use either of these two desktop publishing programs:
   - Adobe FrameMaker
   - Corel Ventura

For some publishers, we often recommend that two desktop publishing layout programs be used to fully meet their production needs.

TRAINING

Although just about anyone can learn the basics of desktop publishing software, there is a long learning curve for understanding the technical requirements of the printing and graphic arts industry. It takes much more than a few mouse clicks to create electronic files that are industry-compliant. Historically, the field has had a long period of apprenticeship to acquire required knowledge and experience.

Any training program must include not only hands-on instruction in the various software packages, but also training in file formats and technical specs, preflighting files, color specs and requirements, graphics specs and requirements, and the basic printing process. Usually, a minimum of five days of training is required to cover this material.

Ideally, one or two team members should concentrate on mastering desktop publishing and production and these tasks should be viewed as their primary job.
Other team members should have an overview of the software and process because their jobs primarily involve other tasks and not production.

RESOURCES

- **Graphic Communications Association–GCA**
  www.gca.org

- **AIGA–The American Institute of Graphic Arts**
  www.aiga.org

- **Graphic Arts Information Network–GAIN**
  www.gain.org

- **Government Printing & Information Council–GPIC**
  www.gain.org/servlet/gateway/PIA_GATF/GPIC/main.html

- **Printing & Graphics Communications Association–P&GCA**
  www.pgca.org

- **Graphic Arts Technical Foundation–GATF**
  www.gatf.lm.com/index.html

- **PubCom's resource website** (copies of this analysis are available)
  http://www.pubcom.com/resources.htm

- **Avoiding the Output Blues**
  Answers all the questions about resolution, fonts, file formats, and film imaging. By Taz Tally.

- **Print Publishing: A Hayden Shop Manual**
  A complete desktop reference for desktop publishing. Similar to *Output Blues* above. By Donnie O'Quinn

- **Print Production Essentials**
  Excellent technical reference for desktop publishers. Filled with examples, tips, and instructions. Although it focuses only on Adobe software, it is applicable to all professional DTP software.
  By Bruce Fraser

- **GATF Guide to Desktop Publishing**
  This comprehensive introduction to desktop publishing explores everything from hardware and software through workflow and quality control. The book also explains the nuts and bolts of electronic image assembly, providing valuable information on a wide range of topics related to preparing documents for print. By Hal Hinderliter.
Key features evaluated in the comparison table

The following items are key features for different types of publishing—Basic Desktop Publishing, Long Documents (books & technical publications), and Tabular Material. The numbers correspond to the line items in the comparison table.

Features for Basic DTP:

A. Typography:
   1. Paragraph stylesheets for typography settings
   2. Character stylesheets for selected text
   3. Keyboard shortcuts for styles
   4. Styles can be “based on” other styles so that they can easily be changed & updated
   5. Manual controls (overrides) for tweaking type, including baseline shift up/down, kerning, font changes
   6. Visual “clue” or icon shows which fonts are TrueType or PostScript in font menus, control panels and dialog boxes
   7. Automatic drop caps
   8. Automatic bullets & numbering with hanging indent
   9. Automatic rules below/above paragraphs
   10. Customize size & placement of SMALL CAPS, super/subscripts & underline rules
   11. Horizontal and vertical scaling of type (stretch taller or wider)
   12. A paragraph of type can straddle several columns without being in a separate frame or text box
   13. Tab stops can be set on a visual ruler (like in word processing)
   14. Search & replace for text, styles, attributes, and other formatting controls
   15. Spell checker
   16. Can search for a particular font and weight and replace it with another
   17. Can create outlines (paths) from a typeface, converting type into a graphic
   18. Has built-in editing module for easier editing

B. Master Pages:
   19. Has master page feature
   20. Can create more than one master page for different looks
   21. Can have both landscape and portrait orientations in same document
   22. Can override or delete master page elements on document pages without affecting the master page
   23. Headers/footers can be programmed to pick up titles of chapters and other data from the document
C. Layout & Design:
24. More than one level of undo
25. Uses frames
26. Frames can straddle pages (cross a spread)
27. Can rotate text & graphic frames
28. Can resize, flip and rotate graphics
29. Can control frame inset individually on all 4 sides (not just one amount for all 4 sides)
30. Can draw ruler guides
31. Can draw ruler guides on pasteboard
32. Can set ruler guides exactly (usually by typing in number x/y location)
33. Can set up designer’s grid that’s different from the number of text columns (ie, 4 grids with 2 text columns)
34. Easy to designate tints of PMS colors
35. Easy to set up color palettes with PMS spot colors & CMYK builds
36. Break commands for next column of text, next page, etc.
37. Irregular & regular text wraps around graphics, text boxes, and other objects
38. Can start a document on either a left or right-hand page (create 2-page spread)
39. Can create a spread with 3 or more pages (ie, when doing large brochures)
40. Has a library feature for frequently-used items
41. Has autosave & auto backup feature
42. Rules/lines/strokes/outlines can be customized (ie, can have a dotted rule 4pts thick with transparent background)
43. Color fills & textures
44. Can draw polygons & polylines in addition to simple circles, squares and straight lines
45. Can draw freestyle Bezier curves and edit nodes
46. Fit text to a path or curve
47. Can print thumbnails
48. Can export text
49. Can pre-tag text in word processing to coordinate with DTP stylesheet styles
50. Bleeds and pasteboard
51. Can zoom in/out in any percentage, rather than at fixed percentages.
52. Has keyboard shortcuts to quickly zoom in/out

D. Preflighting:
53. Can print color “splits” on laser printer to simulate actual color separations
54. Has built-in preflighting tools to check fonts, graphics (eps, tiff, cmyk, rgb, resolution), linked graphic files, printing settings, etc.
55. Collects page layout files, graphic files, and font files to send to the service bureau.
E. Electronic distribution:
56. Has built-in Acrobat PDF creation
57. Can export to HTML
58. Can import and export XML files for Internet publishing (“roundtrip XML”)
59. Can import and export SGML files

Features for book & long technical documents
60. Allows several users to access files (multi-user features)
61. Automatic footnotes at bottom of columns (like word processing)
62. Endnotes at the end of a chapter or document
63. Paragraph numbering
64. Paragraphs of text can be easily rotated inside the main body text columns
65. Equation editor for setting complex math & scientific equations
66. Indexing (index markers in chapters and then generates index)
67. TOC (generates TOC with page numbers based on styles in stylesheets)
68. Cross references across chapters in a publication
69. Book management tools (combine several individual chapters into one “book” for printing, copying files, indexing, generating TOC, etc.)
70. Centralized stylesheet (can use one central stylesheet for all chapters in a book like Ventura)
71. Can copy stylesheet into new chapter or publication.
72. Can maintain links with external WP files (so that editors can edit text without going into DTP)

Features for tabular material
73. Can import data from spreadsheets & word processing tables
74. Can import data from databases
75. Maintains the “cell” construction from spreadsheets & word processing tables (rather than making it all tabbed like in plain word processing)
76. Uses real tables with individual cells (rather than tabbed like word processing)
77. Can wrap long sentences of text inside a table cell
78. Can have multiple paragraphs inside a table cell
79. Can have shading & rules on individual table cells
80. Can place graphics in cells
81. Can designate the table’s column heads and footers, and have them automatically repeated on each page of multi-page tables
82. Can rotate text in a table cell (for column heads)
83. Can straddle or merge several table cells
84. Sort data in a table
85. Create formulas and calculations in a table