PostScript

An Introduction to the PostScript Language

Adapted from:
Scott R. Abel
Regional Systems Engineering Manager
NeXT, Inc.

Language Objectives

- Uniformity & consistency
- High-level interface
- Device independence
- Target: raster imaging devices

A Range of Applications

- Document Preparation
- CAD output
- Line printer applications
- Bar code printing
- Other stuff ...

Requirements

- Device independent
- High-level imaging model
- Extensible interface

Device Independence

- Resolution from 72 dpi to 2400 dpi
- Pixel depth from 1 to 48 bits/pixel
- Uniform treatment of graphics elements, not just lines, but fonts and images can be transformed as well
- Make the capabilities or limitations of the underlying hardware transparent to the client (user) of the interface

Device Independence

- Specify what to draw, not how to draw it
- Base all locations on user coordinate system
- Implicitly separate client from the server

High- Level Imaging Model

- Appropriate graphic elements
- High-quality fonts
- Generalized Clipping
- Coordinate Transformations

Imaging Model

- "Paint" through "Stencil"
- The paint (source) defines the "color"
- The stencil (path) defines the "shape"
- Paths are built up from lines, arcs, and splines
- The result is the "Source" pushed through the "Stencil" onto the paper
- Source may be a color or a scanned image

Imaging Model

- Characters are a shorthand way of specifying a path
- Coordinate transforms apply to all elements (sources and paths)
- Typographic-quality characters

Imaging Model

- 2D, right-handed coordinate system
- floating-point, 1/72 inch default, user-definable units
- All graphics elements scale and transform with coordinates

Extensible Interface

- A programming language: provides procedures and operations on them
- Allows clients to define procedures for particular task
- These can be stored (cached) for efficiency
- Printing task is just a program in this language

Extensible Interface

- Interface is an ASCII-based, interpreted language
- PostScript code can be generated by any computer, in any language
- Can be transmitted in any number of formats and mediums
- Easy to inspect, modify, and update

Extensible Interface

- A protocol, independent of any language or operating system
- Extensible over time
- Extensible for particular devices
- Clients can optimize to their needs

Resources

PostScript Language Tutorial and Cookbook, by Adobe Systems, Inc., Addison-Wesley, 1985. ("The Blue Book")

PostScript Language Reference Manual, *Second Edition*, by Adobe Systems, Inc., Addison-Wesley, 1991. ("The Red Book")

Programming the Display PostScript System with NeXTstep, by Adobe Systems, Inc., Addison-Wesley, 1991. ("The Purple Book")