



The Printer Working Group

Proposed Printing Extensions



Proposed Extensions

- There are two key areas that need extension or improvement for web-based printing:
 - Page rendering
 - Job ticketing
- Page rendering extensions
 - CSS3 Page Media Module
 - DOM interface for generating a printable document, e.g. PDF file, from any element or arbitrary content
- Page rendering improvements (for many browsers)
 - THEAD support to repeat headers on every page
 - “position: fixed” support to repeat content on every page
 - General improvements for widow/orphan support
- Job ticketing extensions
 - CSS/XSL properties
 - Media queries



Proposed Job Ticket Extensions

- There are three major Job Ticket formats in common use today:
 - JDF for high-end production printing
 - MSPS for Windows-based printing
 - An early derivative of the PWG Semantic Model
 - PWG Print Job Ticket (PJT) for 99.999% of all network printers sold today
 - Exposed via the Internet Printing Protocol (IPP)
- Mapping between these formats is feasible
 - Fidelity of mapping can be an issue for some elements - folding, imposition templates, etc.
 - All of the common elements map cleanly - media, copies, duplex, stapling/binding, etc.



Proposed Job Ticket Extensions

- Proposed approach is to define a core set of CSS and XSL properties that represent comment Job Ticket elements and values
- Additionally, we define a Job Ticket source property that allows the document author to provide an exact representation of the Job Ticket in a particular format, for example:

```
print-ticket:url('path/to/job-ticket.jdf') format('jdf'),  
              url('path/to/job-ticket.pjt') format('pwg-pjt'),  
              url('path/to/job-ticket.msps') format('msps');
```

- This is similar to the approach used for embedding of fonts in CSS and provides a great deal of flexibility



Proposed Job Ticket Extensions

- Many of these properties can also specify simple restrictions
 - “Only one copy of this coupon may be printed”
 - “This is a form that must be printed 1-sided”
 - “This content has been prepared to print correctly on A4 or US Letter media”
- Similarly, properties can be assigned based on media queries
 - Tailor output based on selected/supported media, color vs. grayscale, finishing/duplex options, etc.
 - Restrict output based on printing capabilities, e.g., may only print these labels to a printer that supports true monochrome (black ink/toner)



Core Job Ticket Properties

- The PWG has defined a core set of Job Ticket elements that are widely supported by network printers:
 - Accounting: user and billing IDs
 - Copies: count and collation
 - Covers: media and type for front and back
 - Finishings: bale, bind, booklet maker, cover, fold, jog offset, punch, staple, trim
 - Insert Sheets: media, count, and locations
 - Media: dimensions, margins, source, type, and many more
 - Number-Up: count and presentation
 - Orientation: document and feed
 - Output Bin
 - Output Control: color mode, content hint, quality, rendering intent, resolution
 - Overrides: per-page and per-document
 - Sides (duplexing)



CSS Job Ticket Properties

Property	Description
print	All of the following in one property
print-color-mode	Specifies the color mode for the content
print-content	Specifies where content is printed (document, front/back cover, none)
print-copies	Specifies the number and/or range of copies for the content
print-finishings	Specifies a list of finishings to apply to the hardcopy output
print-media	Specifies the allowed/desired media to use for the content
print-orientation	Specifies the formatted output orientation for the content
print-rendering-intent	Specifies the ICC rendering intent
print-sides	Specifies the allowed/desired duplex modes for the content



CSS Media Queries

- Media Dimensions (existing):
 - width, min-width, max-width
 - height, min-height, max-height
- Other Media Query Attributes (new):
 - print-color-mode, print-copies, print-finishings, print-orientation, print-sides
 - Based on selections at print time?



```
/* Report: 2-sided on portrait A4 or US Letter */
print: iso_a4_210x297mm,na_letter_8.5x11in portrait two-
sided-long-edge;

/* The same using separate properties */
print-media: iso_a4_210x297mm,na_letter_8.5x11in;
print-orientation: portrait;
print-sides: two-sided-long-edge;

/* Printed form: force single-sided, monochrome */
print-color-mode: monochrome,process-monochrome !important;
print-sides: one-sided !important;

/* Book: 2-sided, portrait A4 or US Letter,
   bound with cover */
print-finishings: bind-left cover
print-media: iso_a4_210x297mm,na_letter_8.5x11in;
print-orientation: portrait;
print-sides: two-sided-long-edge;
```



CSS Examples (con't)

```
/* Brochure: 2-sided, landscape A4 or US Letter, folded,
           color with relative colorimetric transform
           and black-point compensation */
print-color-mode: color
print-finishings: fold-accordian
print-media: iso_a4_210x297mm,na_letter_8.5x11in;
print-orientation: landscape;
print-rendering-intent: relative-bpc
print-sides: two-sided-short-edge;

/* Shipping label: force 1 copy, 1-sided, 4x6" label,
           true black */
print-color-mode: monochrome !important;
print-copies: 1 !important;
print-media: na_index-4x6_4x6in !important;
print-sides: one-sided !important;
```



Media Query Examples

```
/* Adjust colors depending on color mode */  
@media print AND (color) {  
  body {  
    background: orange;  
    color: black;  
  }  
}  
  
@media print AND (monochrome) {  
  body {  
    background: black;  
    color: white;  
  }  
}
```



Media Query Examples

```
/* Adjust margins when the printer does not bind */
@media print AND NOT (finishings:bind) {
  body {
    margin-left: 0.5in; /* Normally 1.0in when bound */
  }
}

/* Automatically force binding or stapling */
@media print AND (finishings:bind) {
  body {
    print: bind-left !important;
  }
}
@media print AND NOT (finishings:bind) AND (finishings:staple)
{
  body {
    print: staple-top-left !important;
  }
}
```

Summary



- The PWG Print Job Ticket can easily be used to define a set of CSS/XSL Job Ticket properties
- Mapping to commonly used job tickets is feasible
- When necessary, explicit job ticket references can be included
- Media queries can be used to customize the printing experience



References

- PWG Web Site:
 - <http://www.pwg.org/>
- PWG Print Job Ticket specification:
 - <ftp://ftp.pwg.org/pub/pwg/candidates/cs-sm20-pjt10-20120801-5108.07.pdf>
- IPP Everywhere specification:
 - <ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippeve10-20130128-5100.14.pdf>
- Registry of IPP attributes and values:
 - <http://www.iana.org/assignments/ipp-registrations/ipp-registrations.xml>
- CSS Print Profile:
 - <http://www.w3.org/TR/css-print/>
- CSS Paged Media Module Level 3
 - <http://www.w3.org/TR/css3-page/>