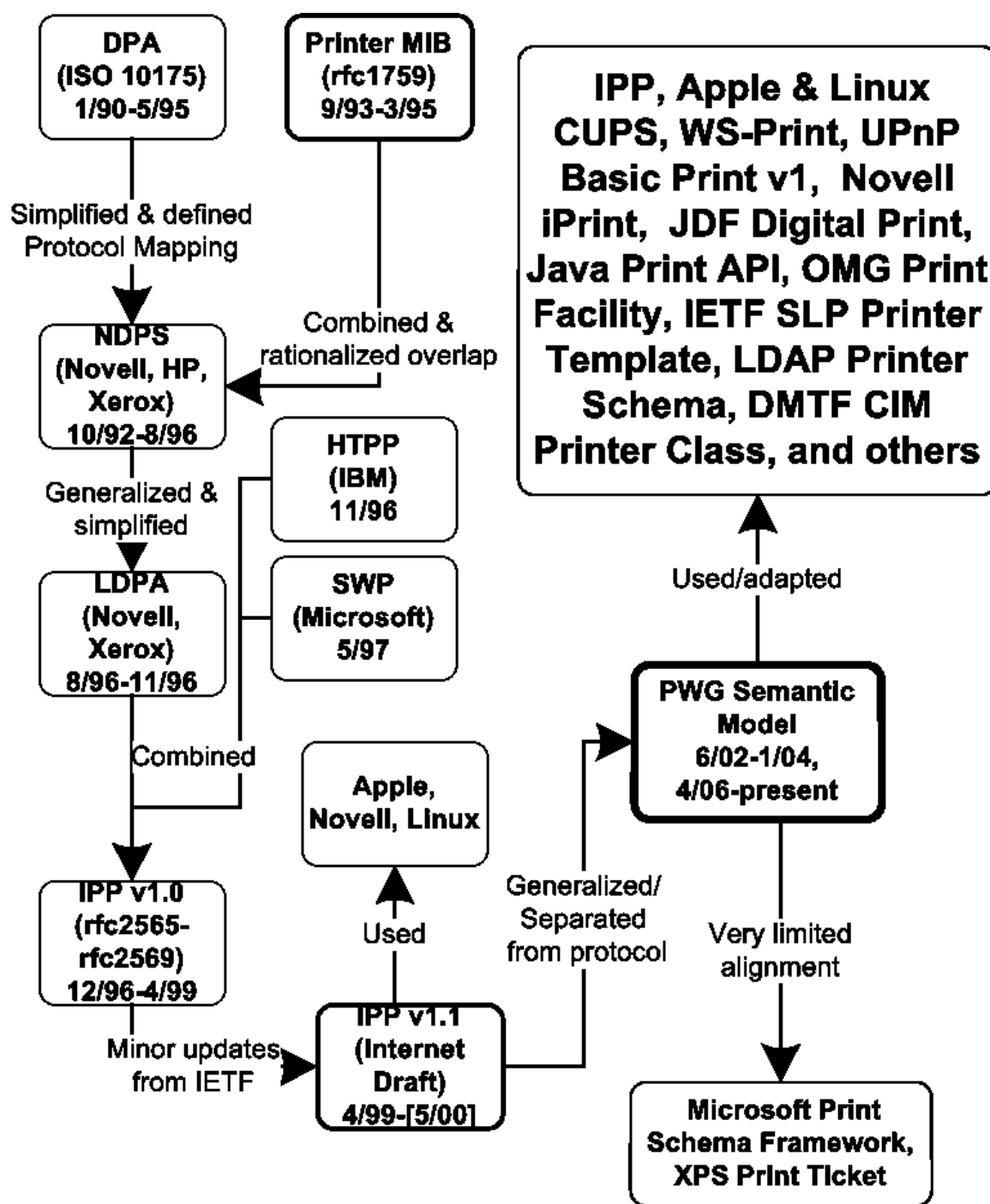# PWG Print Semantics

Its Benefit to Cloud Printing

PWG Print Semantics

- Open Standard

- Vendor neutral

- Designed to be scalable (Subsets and extensions)

- Maps cleanly to existing printer protocols, Print Job Tickets and embedded PDL instructions

- Does not contain Driver specific or UI specific complexities

Print Semantic Evolution and the PWG

DPA (ISO 10175) 1/90-5/95

Printer MIB (rfc1759) 9/93-3/95

Simplified & defined Protocol Mapping

Combined & rationalized overlap

NDPS (Novell, HP, Xerox) 10/92-8/96

Generalized & simplified

HTPP (IBM) 11/96

SWP (Microsoft) 5/97

LDPA (Novell, Xerox) 8/96-11/96

Combined

Apple, Novell, Linux

Used

IPP v1.0 (rfc2565-rfc2569) 12/96-4/99

Minor updates from IETF

IPP v1.1 (Internet Draft) 4/99-[5/00]

Generalized/ Separated from protocol

IPP, Apple & Linux CUPS, WS-Print, UPnP Basic Print v1, Novell iPrint, JDF Digital Print, Java Print API, OMG Print Facility, IETF SLP Printer Template, LDAP Printer Schema, DMTF CIM Printer Class, and others

Used/adapted

PWG Semantic Model 6/02-1/04, 4/06-present

Very limited alignment

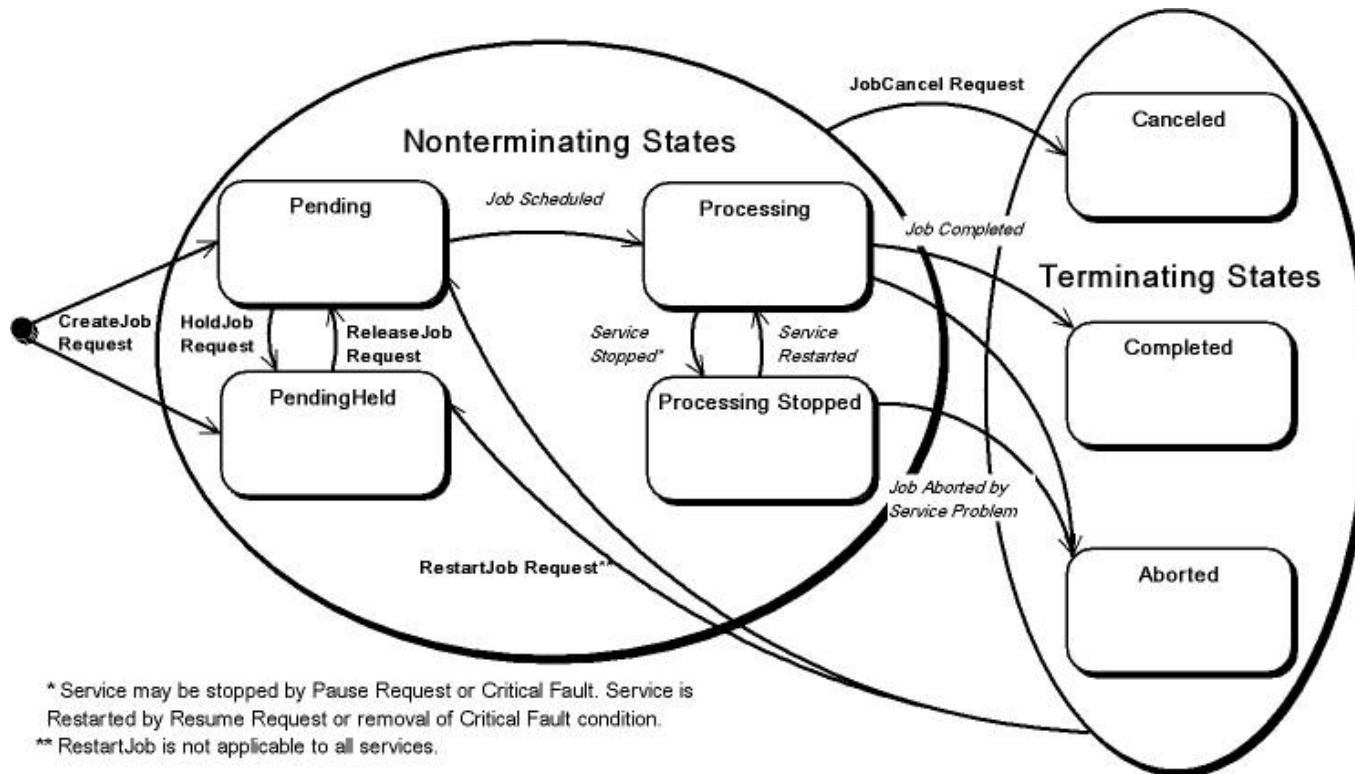**Microsoft Print Schema Framework, XPS Print Ticket**

Print Job Ticket

- Derived from standards dating back more than 20 years
- The semantics are used in every modern print protocol
- Large set of semantic elements and values are defined
- Elements and values are extensible
- Semantics scale from home printers to production printers
- Existing semantics include:

Copies	Sides	Media	Media Type
Orientation	Staple	Jog Offset	Number Up
Job Priority	Covers	Insert Sheets	Binding
Job Hold	Job Password	Imposition	Proof Printing
Job Name	Job Owner	Accounting ID	

Job State

- Fixed well defined states and transitions
- Consistent across job types in an MFD

Job State Reasons

- Provides additional information on Job State
- Includes well defined values and is extensible
- Existing values include:

Job Incoming	Job Queued	Job Outgoing	Queued In Device
Job Transforming	Job Printing	Job Completed Successfully	Job Completed With Warnings
Job Completed With Errors	Document Access Error	Digital Signature Did Not Verify	Job Canceled At Device
Resources Are Not Ready	Job Timed Out	Job Hold Until Specified	Job Password Wait

Simple Job Ticket

```xml
<?xml version="1.0" encoding="UTF-8"?>
<pwg:PrintJobTicket xsi:schemaLocation="PrintJobTicket.xsd"
xmlns:pwg="http://www.pwg.org/schemas/2009/8/sm">
 <pwg:PrintDocumentProcessing>
     <pwg:Finishings>
         <pwg:Finishing>Staple</pwg:Finishing>
     </pwg:Finishings>
     <pwg:Media>na_letter_8.5x11in</pwg:Media>
     <pwg:MediaType>stationery</pwg:MediaType>
     <pwg:OrientationRequested>Landscape</pwg:OrientationRequested>
     <pwg:Quality>Normal</pwg:Quality>
     <pwg:Sides>TwoSidedShortEdge</pwg:Sides>
   </pwg:PrintDocumentProcessing>
   <pwg:PrintJobDescription>
       <pwg:JobName>Sample Print Job</pwg:JobName>
       <pwg:JobOriginatingUserName>Hastings</pwg:JobOriginatingUserName>
   </pwg:PrintJobDescription>
   <pwg:PrintJobProcessing>
       <pwg:JobCopies>4</pwg:JobCopies>
   </pwg:PrintJobProcessing>
</pwg:PrintJobTicket>
```

Simple Document Ticket

```
<?xml version="1.0" encoding="UTF-8"?>
<pwg:PrintDocumentTicket  xsi:schemaLocation="PrintJobTicket.xsd"
xmlns:pwg="http://www.pwg.org/schemas/2009/8/sm">
    <pwg:PrintDocumentDescription>
        <pwg:DocumentName>PwgPresentation.pdf</pwg:DocumentName>
        <pwg:LastDocument>true</pwg:LastDocument>
        <pwg:DocumentFormat>application/pdf</pwg:DocumentFormat>
        <pwg:DocumentUri>ftp://ftp.pwg.org/pub/pwg/mfd/white/PwgPresentation.pdf</pwg:DocumentUri>
        <pwg:Impressions>8</pwg:Impressions>
    </pwg:PrintDocumentDescription>
</pwg:PrintDocumentTicket>
```