

1 **PWG MFD Working Group Face-to-Face Meeting Minutes**  
2 **At Lexmark, Lexington, KY**  
3 **October 18, 2010**  
4

5 **1. Attendees:**

6 Nancy Chen,	Oki Data
7 Frank Martin,	Brother
8 Tim McCann,	Konica Minolta
9 Ira McDonald*,	High North (representing Samsung)
10 Andrew Mitchell,	HP
11 Joe Murdock,	Sharp Lab America
12 Glen Petrie*,	Epson
13 Sarma Sista,	Konica Minolta
14 Amir Shahindoust,	Toshiba
15 Mike Sweet,	Apple
16 Jerry Thrasher,	Lexmark
17 Bill Wagner,	TIC
18 Rick Yardumian,	Canon
19 Peter Zehler,	Xerox

20  
21 \*Phone-in attendee  
22

23 **2. Minutes Taker:** Nancy Chen  
24

25 **3. PWG IP Policy:**

26 The working group Chair Peter Zehler announced that this meeting is held in accordance with PWG  
27 IP policy. No objection.  
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29 **4. Approval of Minutes:**

30 The last teleconference meeting minutes: [ftp://ftp.pwg.org/pub/pwg/mfd/minutes/pwg-mfd-](ftp://ftp.pwg.org/pub/pwg/mfd/minutes/pwg-mfd-minutes-20100923.pdf)  
31 [minutes-20100923.pdf](ftp://ftp.pwg.org/pub/pwg/mfd/minutes/pwg-mfd-minutes-20100923.pdf) was accepted without change.  
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33 **5. Agenda:**

- 34 • Session 1 (9:00-12:00):  
35 MFD Overall Detailed Review: Resolve comments, Detailed review and discussion
- 36 • Session 2 (2:45-4:30):  
37 Complete Overall Review  
38 Discuss FaxIn and System Service to resolve any issues preventing their completion  
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40 **6. MFD Overall Detailed Review:**

41 (document file: <ftp://ftp.pwg.org/pub/pwg/mfd/wd/wd-mfdoverallmod10-20101015.pdf> )

- 42 • For the benefits of new attendees, Bill gave a little background of the development of this  
43 specification, Pete gave a brief high-level overview of the MFD Model and Overall Semantics.
- 44 • The MFD Model and Overall Semantics document was started to provide general context on the  
45 various MFD services, e.g., the uniform approach to service models, terminologies, etc. It has  
46 now evolved to include everything that is common to more than one service and acted as the  
47 key to the XML Schema of the MFD model. This document has been evolving with the MFD

48 Schema for quite a while. Now since the Schema has been stabilized, it's ready for being  
49 finalized. The figure numbers and references to them may not be correct in the document right  
50 now due to some Word editing problem, we are focusing on content adequacy and sufficiency  
51 of the representation of the schema information in the document today.

- 52 • The MFD Schema is rooted at the object "System", which represents both service and device  
53 aspects of the entire MFD (see the latest XML schema files:  
54 <ftp://ftp.pwg.org/pub/pwg/mfd/schemas/PWG-SM2-Latest1.zip> or the Web browse-able  
55 schema [http://www.pwg.org/mfd/navigate/PwgSmRev1-113\\_System.html](http://www.pwg.org/mfd/navigate/PwgSmRev1-113_System.html) at PWG web site).  
56 The device aspect of MFD was traditionally managed by SNMP. The Configuration of the System  
57 is a list of all the subunits that are currently defined in the printer MIB, and additional subunits  
58 such as scanner, fax modem. The system configuration is also available to each MFD service,  
59 providing the service-specific view of the subunits used to complete the service. The Managers  
60 and Agents of the devices are from WIMS. System Status – the status of the entire MFD is the  
61 roll-up of the statuses of all the MFD services. MFD Services include Print, Scan, FaxIn, FaxOut,  
62 EmailIn, EmailOut, Resource, Transform Services, and System Service which is a service for MFD  
63 as a whole operating on systems wide resources. Transform Service is for converting electronic  
64 document from one format to another, one use is for providing document format  
65 transformation from the output of one service to the input format required for its destination.  
66 The MFD model does not cover complex jobs or workflow, but has all the components for a  
67 higher level language to handle job splitting, job union, management of a sequence of tasks  
68 performed by services. All services follow the same structure where each service can have  
69 multiple instances and each instance (representing a job queue) has a job pool of a set of  
70 defaults and capabilities. This can allow two different job queues with different restrictions  
71 (policies) on color printing for example, one can be used to print color document, the other can  
72 only print black and white. Recent changes include allowed values for a job ticket or document  
73 ticket attributes. The Job Ticket has job and document processing capabilities at the job level  
74 which apply to the job and document elements within a job unless overridden by a document  
75 instance. Multi-document processing capability is optional. XXXCapabilityReady are those  
76 elements that can be applied to a job without needing operator's intervention (e.g. the media  
77 that have already been loaded in a tray). ServiceConfiguration is the service-specific view of the  
78 subunits used by the service. Service Defaults give you the default tickets of a job and a  
79 document. The defaults specify the ticket element values when they are not specified by the  
80 submitted job. Service Description is information that can be set administratively, e.g. name and  
81 location of the service, controlled by local policy. Service Status are information that cannot be  
82 set by end users or administrators, e.g. the service states changed by service operations (pause,  
83 resume, etc.). Condition Table in the Service Status is based on the alert table in the MIB,  
84 includes active conditions and condition history where an active condition is kept after being  
85 removed/resolved. Service Counters in Status is based on all counter definitions in the PWG  
86 Counter specification and the Counter MIB. The MFD Model and Overall Semantics document  
87 does not include any details on the MFD System object or any service-specific information on  
88 each individual MFD Service; the former is covered in the MFD System spec, the latter in an  
89 individual MFD Service spec.
- 90 • Status of the specifications of the services covered by the MFD Overall document:
  - 91 ○ Print, Scan, and Resource Services are completed as PWG Candidate Standard. Each of
  - 92 them has a specific PWG MFD XML Schema version locked in at the time the
  - 93 specification was completed. The PWG MFD XML Schema has evolved to be more
  - 94 consistent, has basic common structure across the services.
  - 95 ○ Copy Service is very close to complete.

- 96           ○ FaxIn Service has just started.
- 97           ○ FaxOut is near complete.
- 98           ○ EmailIn, EmailOut and Transform are not started.
- 99           ● Many editorial errors were raised and then fixed on-the-fly by the editors during the meeting.
- 100          They are not recorded in this minutes. Recorded herein are only global changes that need to be
- 101          carefully searched and fixed throughout the document after the meeting, and some important
- 102          conceptual or technical re-alignments agreed or to be discussed further in future meetings.
- 103           ○ Agreed that the textual descriptive name for the current MFD XML Schema with
- 104           reference to [MFD\_SCHEMA] should be consistent throughout the document as “the
- 105           PWG MFD XML Schema”. The last sentence of the first paragraph of Section 1.1 should
- 106           read: “This document is technically aligned with the named version of the PWG MFD
- 107           XML Schema [MFD\_SCHEMA].”
- 108           ○ Globally make sure that all “e.g.” and “i.e.” has a period following each character.
- 109           ○ Make it clear that in an XML Schema diagram, an element enclosed within a solid box
- 110           represents a mandatory element; whereas the one enclosed within a dash-lined box
- 111           represents an optional element. This applies to an “Any” element which represents an
- 112           optional extension element. However, an “Any” within a pentagon represents an
- 113           attribute extension which is optional by definition and is always bounded by solid lines.
- 114           ○ Add a discussion about the distinctions between System Service Description/Status and
- 115           System Description/Status before the description of MFD services. System does not
- 116           have Capabilities because System does not have jobs, therefore does not have job or
- 117           document ticket. System Service operates on System object, has its Service Description
- 118           and Service Status that are distinct from the System Description and System Status.
- 119           ○ Section 2.1.2 Functional Overview of a MFD
- 120           ▪ Paragraph 3 and 8 are duplicates, also paragraph 6 and 10 are duplicates.
- 121           Remove the copy that is redundant.
- 122           ▪ Figure 4 Relationships within a MFD diagram needs a higher resolution update;
- 123           also add recent changes to Service Defaults and Service Capabilities.
- 124           ○ Globally make sure that all words in a multi-words title case term are separated with a
- 125           space.
- 126           ○ Section 2.2 Jobs, Documents, Tickets, and Templates
- 127           ▪ Paragraph 4, first sentence should read: “Support of multi-document jobs is
- 128           optional.”
- 129           ▪ The first sentence of the last two paragraphs: remove “as a job / document
- 130           within a job is processed”. A Job / Document Receipt is created as soon as a job
- 131           is created so that job accounting may take a look at the values in the receipt.
- 132           The “values” in the second sentence of both paragraphs should be “actual
- 133           values”.
- 134           ○ Section 2.3.1 Content Regions
- 135           ▪ The end of Paragraph 3 at the top of page 25. The reference for Content Region
- 136           is from Print Service which should be PWG 5100.3 (IPP Production Printing),
- 137           section 2.2 Finished Page Image Cell.
- 138           ▪ Add a discussion text that references Figure 6 Hardcopy Document, Region,
- 139           Image Relationship.
- 140           ○ Section 2.3.2 Job/Document Object and Digital Document Cardinality
- 141           ▪ Second sentence: only Scan and Transform Services accept multi-document
- 142           jobs. Change (e.g., Print and Scan) to (e.g., Scan and Transform).

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- For MDSF, clarify that “Each document object contains one file URI for the image file location. “
  - For MDMF, the last two sentences, clarify that “Each Document object contains a file URI for each image file location.” And “Each Destination is the directory URI for the Document.”
  - Section 2.4.2.3 Document Format Coordinates
    - The discussion of “XXX Box” mentioned in the text and figures in this section (Section 2.4) is taken offline for input from Mike Sweet and some experts from Adobe to align with the PDF and PS terminologies. In IPP, “region” is used instead of “Box”. Is Content Box the same as “Image Box”.
  - Section 2.5 Job and Ticket Lifecycle
    - Figure 11 needs image resolution upgrade, be larger. Correct the arrow direction to pointing from the text “May be obtained from locations outside the scope of the specification (e.g. Resource Service)” to the “Job Template” box.
  - Globally remove any text that reference FaxIn Service or specification, because we only have an interim draft for the service.
  - Globally change all the bolded text in the body of all sections in the document to plain text.
  - Globally left justify the description text in the cells of all tables in the document.
  - Section 2.6 Datatypes
    - Ira will provide the reference to the DMTF CIM printer class to Bill.
  - Section 3 System Configuration - Subunits
    - Table 4: Add RFC reference for FaxModem. Move [RFC3805] down to each of the subunits that uses a Printer MIB object as the source.
    - First sentence after Table 4: change “Certain Status elements...” to “Many Status elements...”.
    - Remove text on description of “Any” element in the paragraph after Table 4. It is already described in a previous section.
  - Section 3.1.1.1 Power Counters
    - All Power Counters in subunits are life time counters; there is no persistence attribute in the current MFD XML Schema here. Update the description text and Figure 14 Power Counter Schema.
  - Section 3.1.1 Common Subunit Description Elements
    - Include the XML Schema diagram for all Power elements
  - Global change: an Element description Table should always follow the XML Schema diagram for which the Table describes.
  - Section 3.3 Covers:
    - Cover should not have any power management elements: should not allow scheduling of power behavior for cover interlock, should not allow hibernation of a power interlock. Power for cover interlock cannot be suppressed – violates safety regulatory compliance. Pete to remove all Power elements from Cover Description Schema. Bill to add Cover Description in Table 16 Cover Elements
  - Section 3.4 FaxModems:
    - Reference should be RFC 1696 (Modem MIB) not RFC3066 (Language Tags) in both Description and Status Element Tables.
  - Section 3.5 Finisher:

- 189                   ▪ Table 19 Finisher Subunit Elements – FinisherType reference description should  
190                   read: “FinDeviceTypeTC is originally defined in [RFC3806] and updated in [IANA-  
191                   FIN]...” Ira to send the references [IANA-FIN] and [IANA-PRT] to Pete or Bill.
- 192 ○ Global comment: change “compatible with” to “technically aligned with” to mean that  
193                   the elements and semantics are preserved.
- 194 ○ Section 3.12 Output Channels
- 195                   ▪ Input and Output Channels are software stacks, Interpreter is also a software,  
196                   they cannot be power managed.
- 197                   • Pete to remove all Power Management elements from the Schema. Add  
198                   notes to the common introduction section to subunits.
- 199                   • Ira to add similar notes in Power Model spec.
- 200 ○ Section 3.16 Scanners:
- 201                   ▪ Table of Scanner Subunit elements: Change ScannerCounterLife and  
202                   ScannerCounterPowerOn elements to ScannerLifeCount and  
203                   ScannerPowerOnCount to align with prtMarkerLifeCount and  
204                   prtMarkerPowerOnCount in Printer MIB.
- 205 ○ Section 3.17 Storages:
- 206                   ▪ Remove the enumeration of Storage Type keywords and only provide some  
207                   examples, or list them in the Table of Storage Elements in StorageType keyword  
208                   description column.
- 209                   ▪ Remove the Reference Column of the Vendor Subunit Elements.
- 210 ○ Section 4 Service Model Component Elements
- 211                   ▪ Change the title to “Service Model Element Groups”.
- 212 ○ Section 4.4 Service Capabilities and Service Capabilities Ready
- 213                   ▪ This section has added Job Ticket Capabilities and Document Ticket Capabilities  
214                   in Service Capabilities and Service Capabilities Ready.
- 215                   ▪ This section currently is missing subsections that describe Document Description  
216                   Capabilities and Document Processing Capabilities of Document Ticket  
217                   Capabilities.
- 218                   ▪ The capability support for the recently added properties of Document  
219                   (Compression, DocumentFormat, DocumentFormatDetails,  
220                   DocumentFormatVersion) need to be added. These elements are represented in  
221                   a Service’s ServiceDescription (as XXX). They are represented in a Services’s  
222                   capabilities (in the Job and Document Description element of the tickets) as  
223                   XXXSupplied. They are represented in a Services’s defaults (in the Job and  
224                   Document Description element of the tickets) also as as XXXSupplied. The  
225                   agreed upon policy is if an Administrator changes one of the values, all the  
226                   associated values are changes as well. Effectively there is a single data item  
227                   with multiple symbolic links. It was also noted that the Job’s Status element has  
228                   a related set of elements (i.e. XXXDetected) that is used to record the actual  
229                   value used by the service.
- 230 ○ Section 4.4.1 Document Processing Capabilities
- 231                   ▪ Missing representation of Document output color – Currently ColorEntry  
232                   represent the colors for Scan, not for document output color.  
233                   OutputDocumentColor is for the generation of digital document, not for  
234                   outputting a hardcopy document. The name of the element and the list of color  
235                   keywords for user to choose for hardcopy document output color is deferred to  
236                   IPP Everywhere group discussion for the final decision.

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- Pete/Bill to remove ColorEntry and Colorrant from the Table of Document Processing Capabilities, and the named version of the MFD Schema for this spec so that the MFD Overall Document does not depend on the future version of IPP spec. The latest spec of the Overall document will be reflected in IPP Everywhere spec.
    - MediaCol should have its own section that contains detailed description of the object and the description of this element in the Table of Document Processing Capabilities should state that “See Section xxx for MediaCols.” In the section for MediaCols should specify the special rules that govern MediaCols. The most import rule is when you get Printer Capabilities, MediaCols (may be a large database) should not be returned by design. An explicit call to get MediaCols is required for this purpose.
    - OriginalType is obsolete and replaced by other attributes. Remove.
    - OutputDocumentSize is currently defined in Transform Service for scaling images, also applicable to Scan Service.
  - Section 4.4.2 Job Description Capabilities
    - Remove all Resource-specific attributes in the Table of Job and Resource Description Capabilities. Remove “and Resource” from the title of the table.
    - Add XXXSupplied for Compression, DocumentFormat, DocumentFormatDetails, DocumentFormatVersion in the XML Schema diagram and the elements table.
  - Section 4.4.3 Job Processing Capabilities
    - In the Table, RetryInterval and RetryTimeout should be of type “range of integers”.
    - Move the MediaCol description text and Schema diagram as a section to the earlier section before its first reference.
  - Global: Delete lowerbound and upperbound entries from Capabilities tables. They are represented by range of integers.
  - Global: Make sure that MakeAndModel is a Boolean in Capabilities, a string in Ticket.
  - Section 4.5 Service Description
    - In the Table of Service Description Elements
      - PrinterSettableElementsSupported is a list of keywords.
      - Delete the ServiceGeolocation entry that has empty description.
      - XriAuthentication and XriSecurity are both of keyword type.
    - Add the newly added properties of Document (Compression, DocumentFormat, DocumentFormatDetails, DocumentFormatVersion) in the XML Schema diagram and the elements table.
  - Section 4.6.1 Condition Table
    - First paragraph, 4<sup>th</sup> line: “Alerter Tabble {“ should be “Alert Table [“.
    - Second paragraph,
      - First sentence, separate the concatenated two words in “elementsconsists”.
      - 2<sup>nd</sup> bulleted text: “otional” should be “optional”.
  - Global: Remove all notes on “Any” after the first description.
  - Section 5 Imaging Job Model
    - Paragraph 3,

- 282                   • Delete the first sentence, remove the () of the second sentence, and
- 283                   reword the sentence, e.g. “Some services do not expose the Document
- 284                   object”.
- 285                   • Line 2, change “some Services are considered not to include
- 286                   Documents” to “some Services do not support Documents”.
- 287                   • Line 5, remove ‘s’ from “Document Processing elements”.
- 288 ○ Section 5.1 Job Status
  - 289           ▪ Add ‘.’ At the end of first paragraph.
  - 290           ▪ In Table, add datatype “string” for JobUuid element. Add datatype “anyURI” for
  - 291           JobOriginatingUri.
- 292 ○ Globally for all UUIDs: Add description text “An urn::uuid unique URI value”. Add
- 293   reference RFC4122 for UUID.
- 294 ○ Global: For all the description of the DocumentAccessError element in tables, remove
- 295   the second sentence entirely.
- 296 ○ Global: Fix all unmatched open/close parentheses.
- 297 ○ Global: Bulleted items should capitalize the first letter of the first word.
- 298 ○ Global: Defined terms should be in titlecase.
- 299 ○ Section 5.2.2 Document Processing
  - 300           ▪ In the table of elements, add “complex” type for “CoverBack” element. Add
  - 301           datatype ‘complex’ for OutputDocumentSize
  - 302           ▪ Remove the table of Media Collection Elements in Job Ticket – the table and
  - 303           description text of these already exist in its own section previous. Here, only
  - 304           reference the MediaCol section in Capabilities.
- 305 ○ Sec 5.2.3 Job Processing
  - 306           ▪ Remove Sec 5.2.3.1 & 5.2.3.2 which are described in the reference [JPS2].
- 307 ○ Global (& Table 50): The reference to “IPP production set 2” should be “IPP JPS2” and
- 308   should use its official Candidate Standard document name when the spec is approved.
- 309   The referenced document “[prod-print2]” should be “[JPS2]”.
- 310 ○ Global: “JobJobDelayOutputUntil” & “JobJobDelayOutputUntilTime” should be
- 311   “JobDelayOutputUntil” & “JobDelayOutputUntilTime” respectively.
- 312 ○ Section 6 Document Model
  - 313           ▪ First paragraph, the sentences in () – “During Job creation, it is possible that
  - 314           temporarily there are zero documents...” should be consistent with the changes
  - 315           made in the Job Model section.
- 316 ○ Section 6.2 Document Status
  - 317           ▪ The description of the element DetailedStatusMessages in the element table:
  - 318           remove all the elaborations after the first sentence.
- 319 ○ Global: remove all the elaborations of the description text for an element that is taken
- 320   from the referenced document, especially those conformance/restriction statements in
- 321   the referenced spec.
- 322 ○ Section 7.1.2 Job Creation
  - 323           ▪ Remove the text that was already described in section 2.5. Job and Job Ticket
  - 324           Lifecycle.
- 325 ○ Section 7.1.4
  - 326           ▪ Change the title to: “Service Pause, Service Shutdown, and Job Abnormal
  - 327           Termination”
- 328 ○ Section 7.2.1.2 Operations, Events, and Conditions

- 329                   ▪ Update to better resolution for the figure on Service State Transitions and
- 330                   Causal Events.
- 331           ○ Sec 7.2.1.3
- 332                   ▪ Add Notes for Table 54 State Change by Operations
- 333           ○ Sec 7.2.2 Job States and Job Transitions
- 334                   ▪ Remove all conformance statements from the definition of the job states.
- 335                   ▪ Job States should refer to RFC2911. Do the same for Document State.
- 336                   ▪ Change ScanJob => Job in fig 76.
- 337           ○ Sec 7.3 Service Operation
- 338                   ▪ Remove conformance statements on paragraph 2 & 3.
- 339           ○ Sec 7.3.1 Basic Service Operations
- 340                   ▪ Fix the font size for subsection heading 7.3.1.1 & 7.3.1.2
- 341                   ▪ Put an introduction states that this section specifies the normative behavior and
- 342                   semantics of all services that are adopted in MFD model to keep the basic
- 343                   operations consistent.
- 344                   ▪ Sec 7.3.1.2 - The last sentence of the first paragraph: change “before the it is
- 345                   actually terminated” to “before the document is cancelled”.
- 346                   ▪ Sec 7.3.1.6 – Remove “Operation” from the title.
- 347           ○ Global: Add an explanation for the exception in service operation definitions : spaces are
- 348                   not inserted among title-case-words of a service operation name to preserve clarity.
- 349           ○ Sec 7.3.1.11 – Change the operation name to Get<service>Job.
- 350           ○ Sec 7.3.1.15
- 351                   ▪ Remove Table 60 & 61, and reference RFC2911 in place of the tables.
- 352           ○ Sec 7.3.1.19
- 353                   ▪ The “URI” for operation or element should be title case “Uri”, but in the text
- 354                   description they should be “URI”.
- 355                   ▪ Pete: ensure MFD XML Schema will use Title case for operation and elements,
- 356                   and for future PWG Semantic Model version 2. Currently SendPrintUri and
- 357                   PrintURI in Print Service of MFD XML Schema are inconsistent. WS-Print/WS-
- 358                   Scan use Title case.
- 359           ○ Section 7.3.1.21 Set<service>JobElements
- 360                   ▪ The necessity of Hold & Release Job operations were discussed; they are to be
- 361                   deprecated in the future IPP specification. Agreed to add notes in these two
- 362                   operations in Sec 7.3.1.14 & 7.3.1.15 that state in the second paragraph that
- 363                   performing a Set<service>JobElements operation by setting the “HoldJobUntil”
- 364                   or “HoldJobUntilTime” attributes is semantically equivalent to these two
- 365                   operations.
- 366                   ▪ The last paragraph needs to be re-written.
- 367           ○ Global: Remove state tables (tables 64 & 65) wherever possible, and replace them with
- 368                   a reference to the proper table in RFC2911.
- 369           ○ Section 7.3.2.12 Shutdown<service>Service
- 370                   ▪ Should we Include job state reasons, service state reasons with mention of
- 371                   extensibility: We agreed that in the section of Service State, there should
- 372                   description of service state and service state reasons and how they related to
- 373                   each other, and how they should be extended. Do not provide the list of all of
- 374                   them, simply point to the IANA registry for all of them. The relationship
- 375                   between service state and service state reasons should be described in section



376 4.6.1 – Condition Table. State reasons augment the information available about  
377 the state of services or jobs.

378 • Pete to provide the verbiage for this.

379 **7. Next Steps**

380 • Pete and Bill to post the updated version of the MFD Overall document from today's review.

381 • Pete to Update the MFD XML Schema and the Schema diagram in the Overall.

382 • Pete to republish the named XML Schema for the Overall spec.

383 • Everyone: please continue to review the remaining sections not discussed today and provide  
384 comments through email list.

385 • All to review the updated Overall document in the next MFD teleconference.

386 • Next teleconference is in two weeks on November 4, 2010, Thursday, 3pm EDT.