PWG MFD Working Group Meeting Minutes
At Samsung, Irvine, CA
December 5, 2008

1. **Attendees**:

Shah Bhatti,	Samsung
Nancy Chen,	Okidata
Lee Ferrell,	Canon
Grant Gilmore,	366 Software
Ira McDonald,	High North Inc.
Nayartara Pandit,	Samsung
Glen Petrie,	Epson (on phone)
Andrey Savov,	Toshiba
Dinesh Srirangpatana,	Samsung
Jerry Thrasher,	Lexmark
Bill Wagner,	TIC
Dave Whitehead,	Lexmark
Peter Zehler,	Xerox (on phone)

2. **Minutes Taker: Nancy Chen**

3. **Agenda:**
   - Overall consideration of modeling MFD services
   - Review of the initial FaxOut Service specification
   - Review of Resource Service specification

4. **Discussion of Overall Consideration of Modeling MFD services**
   (see file: MFD_Outline_Nov_08.pdf)
   - MFD Semantic model is the modeling of imaging services rather than functional or physical modules. The diagram on page 3 depicts the end user's view of the model, with the solid black arrows representing main data flows among services and subunits, not control flows. We must define and input/output of the services**.** The system consists of integral service units that can be combined into workflow. The arrows on the diagram are for data flow among imaging services. Blue dashed lines: resource requests/responses.
   - In Terminology section: <service> is used to denote any MFD service in general.
   - There is no issue with the top level MFD service architecture model diagram.
   - Issues with the Job Ticket Lifecycle Diagram (page 9):
     - User Interface should not talk to the Service; it's always a Service Client talking to the Service.
     - Default capabilities is the default allowed values supported by the Service. Local Client could retrieve default capabilities and construct a pull down list for UI to populate a job ticket.
     - A job ticket can be constructed in four ways: Construct the ticket directly from the XML schema, retrieve the default ticket, retrieve the default

service capabilities and construct a pull down list for UI to populate a job ticket, retrieve previously stored ticket in Resource Service.

- The arrows from Job Template to Default Job Ticket and to Default Service Capabilities should be deleted.
  Bill noted that these two arrows were in the Scan Job Ticket Lifecycle diagram. It was then discovered that the diagram in the Scan Service was a UML diagram, and the two arrows represent refinement relationship between the Job template and the Default Job Ticket and the Default Service Capabilities. The UML diagram shows how Service components are composed, beneficial to service implementers. Bill's Job Ticket Lifecycle diagram is a dataflow diagram, beneficial for a general understanding of data flows among components of a service.
- We agreed the need for a high level MFD architecture / model document that includes all common terminologies, one common diagram on Job Ticket Life Cycle diagram. The reference architecture includes a high-level information flow diagram among all services and common components, and Job Ticket Lifecycle UML and dataflow diagrams. This will eliminate the problem with requiring each Service spec to provide the same diagrams repetitively, and the diagrams may diverge over time. Each service should simply refer to the reference architecture diagram and state this is an instance of the diagram – include job ticket lifecycle UML and data flow diagrams for each service, and annotate the components that don't apply to a particular service.
- **Action Items**:
  (1) Pete Zehler will annotate/label the Scan Job Ticket Lifecycle diagram to indicate it's a UML relationship diagram, and add Bill's data flow type of Job Ticket Lifecycle diagram to Scan Service specification. Also a normative ref to UML spec. should be added to the spec.
  (3) Pete will mark up updates for Bill's Job Ticket Lifecycle dataflow diagram. The arrow from UI to Service should be deleted. The arrows from Job Template to Default Job Ticket and to Default Service Capabilities should be deleted. Legend for the arrows should be added in the diagram.
  (4) Bill Wagner will evolve the current overall outline of MFD modeling document into a high level MFD architecture/model document. The diagrams in the MFD reference architecture will be updated along with each service definition to be developed in the future. This high level MFD architecture/model document will become an informative standard document that trails the MFD service standard development.

5. **Review of FaxOut Service:**
   - **XML Schema high level view of operations (WSDL view of FaxOut operations)**
     - AddFaxOutHardcopyDocument – allow user to fax out a physical document. This operation adds a document scanned from a scanner.
     - AddFaxOutURI – this operation allows fax-out by reference.
     - SendFaxOutDocument – this is a push of fax-out document.

- CreateFaxOutJob – this creates a fax-out document
- CloseFaxOutJob – this operation explicitly closes out a fax-out job or implicitly does that via a last-document flag.
- CancelFaxOutJob – this operation cancels a fax-out job.
- GetActiveFaxOutJob – this operation gets a list of active or pending fax-out jobs.
- GetFaxOutJobHistory – get a list of fax-out jobs that has reached terminating state
- GetFaxOutJobElements – get a list of elements of a fax-out job
- GetFaxOutServiceElements – get the attributes of the fax-out service
- ValidateFaxOutJob – validate a fax-out job
- Administrative operations:
  - Disable/enable fax-out service
  - Pause/resume, shutdown/startup fax-out service
  - Hold/release fax job
- Mostly the same operations are provided by Scan Service, except for the AddFaxOutHardcopy document operation.

- **Review of FaxOut Specification**
  (see file: ftp://ftp.pwg.org/pub/pwg/mfd/wd/wd-mfdfaxoutmodel10-20081119.pdf)
  - **Out-of-Scope**:
    - any compound service such as FaxOut-To-Email, FaxOut-To-Fax, FaxOut-To-Mailbox, or FaxOut-To-Print
    - any workflow protocol, i.e., sequencing and coordination of FaxOut jobs across multiple services.
    - any FaxOut service management operations for MFDs that are not network connected. But it does not prevent you to map to a locally connected device.
    - creation of new document or file formats.
    - **AI:** the examples of combined service should be deleted and replaced with FaxOut-to-Store (email/ftp/mailbox/…). We shouldn't be defining these combined services.
  - **Faxout Service Model Overview**
    - **Action Items:**
      - Figure 1 is a copy from Scan Service, needs to be updated for FaxOut Service. Pete/Shah will update the spec.
      - Need to add filters for ActiveJobs and JobHistory – e.g. "MyJob" fil ter, currently the model does not have filter, you need to use "extension" to add filter. Xerox has "WhichJobs" filter. Recommend to add filter in the standard semantics for all services.
        - **Ira** will recommend the filters based on IPP semantics.
        - **Pete** will update the GetActiveJobs and GetJobHistory operations to add the recommended

filters for the Scan Service Last Call spec and the FaxOut Service spec.

- Delete “It is also possible for a FaxOut Job to contain multiple FaxOut Documents.” on Line 419 – redundant.
- Re-work the sentence “FaxOut Documents are associated with Digital Documents that contain the data from the faxed out Hardcopy Documents.” On lines 419-420.
- Rework Fig 3: Need to include all possible input and output scenarios.
- Section 7.2 should be removed. FaxOut service should not need to worry about how documents are stored as SDSF, SDMF,…, this section should be removed. The associated processing instructions should not expose these parameters for user to configure either. It’s a single doc send across fax protocol always. Sending multiple docs should be considered as workflow process combining with transformation service. It’s useful to comment that we allow faxout service to collect multiple jobs with multiple docs from multiple sources and send out as one job and one logical output doc. The output is always one logical electronic doc that may contain content of multiple documents. Also a MFD service has an attribute to declare whether it supports multiple-document output jobs. A transformation service may be used to convert a multiple-document output job to multiple single document output job at workflow process level.

- Network FaxIn and Network FaxOut have been included in on FaxIn and FaxOut services, but Counter spec and MIB has separated them. For accounting purposes, this is actually desirable to separate them. However, the ISO real-time fax uses IETF fax format but can be sent over via PSTN fax, but has different cost structure – needs to have a different accounting from dig fax.

- **The Coordinate System:**
  - **Action Items:**
    - The coordinate system commonly used by Scan Service/FaxOut Service, JDF PDF Print job, and other MFD services in the future should be captured in the overall MFD reference architecture document. In individual services such as Scan Service should only add a note on page one that states “it’s a intention to conform with the overall document”. Since the Overall MFD reference architecture document is to evolve with all MFD services to be defined in the future; it won’t be completed when a service spec is completed. It should be noted in the individual service spec that “It’s the intent of PWG to develop an overall reference model” in the abstract of each

service. The reference architecture spec should be an informational spec – need not to be prototyped.

- **FaxOutServiceConfiguration:**
  - Console, cover, fax modem, input channel, scan media path, interfaces, interpreters (print-ready pdf could be the input) are applicable. Due to the need to print confirmation sheet, all print related subunits apply. Therefore, practically all subunits apply to faxout service.
  - Printing confirmation sheet is NOT a print job. Printing a Log page is a print job. In Xerox or PWG model, it does not count as a click, implementation should consider it a print job.
  - FaxModem
    - FaxModemStatus: Used whatever applicable from RFC1696. There is no standard Fax MIB. It provides the compression type last time was used, connection failed reason, send/receive rate, error control is used, FaxModemStates : derived from the subunit rates, carrier lost time, modulation scheme used.
  - **Action Items:**
    - Remove ItuStatistics (nobody should count CRC errors)
    - Need to look at ISO spec for IETF fax, for status and compression type used. RFC1696 is too old. It's a monitoring MIB, not a capability MIB; good for status, but not for capabilities or configuration.
    - **ALL**: ask your company domain experts about how to model fax modem properly. What is the list of real capabilities and operations of fax modem should be included in the spec today? For example, should we include color encoding capability in V-series fax modem for G3 fax? There are also government regulations about the use of fax modem capabilities. There maybe good hint by looking into the private MIB of the fax modem.
    - Input channels are job control channels, data transfer operations to start a job. There is a pointer of the interpreter to job control language, and an optional pointer to job data interpreter in FaxOut Service. This should be corrected in the FaxOut Service spec. In scan only input hardcopy, no PDL jobs – this should be corrected in the Scan Service spec accordingly.
- **FaxOutServiceDescription:**
  - Most properties are inherited from generic imaging service. Specifics to the FaxOut Service are default fax modem, dialing methods, and job timeout.
  - **Action Items** –
    - Check other various standards what name used for JobTimeout, and what behaviors are specified for an

incompletely submitted job (e.g. scanning page by page and never finished). This is the timeout between operations used to construct a FaxOut Job (submission timeout). Incompletely scanned job should not be sent out by FaxOut Service. This element is used in WSD. We need to find out how it's named in WSD. WSD has a specific operation for user to set the JobTimeout.
        - DialingMethod: This should be a property of fax modem subunit. For example, whether it's a pulse/tone service phone is determined by the modem itself; that can't be changed by the service.
        - The data type of all attributes should be specified in all services.
- **FaxOutServiceStatus:**
    - Faxout specific attributes are:
        - FaxOutServiceCounters, Volume – to control the volume of speaker on the device
        - **Action Items:**
            - Volume should be the property of modem subunit, not a service property. It is configurable for when and what volume of the speaker. But the operations for configuring this property should be deferred for the management operation for the device to be defined in the future.
            - ConditionTable: Add training level to conditions. Add the same to the Scan Service spec. WSD did not model training levels. These are alerts, the name is the surrogate of the index of the MIB.
    - JobHistory:
        - Retention period should be tied to log of the fax job.
        - The log should be persistent. Persisted as Printed log is legal certainly in US. PWG does not model log.
        - **Action Item:** The spec should clarify that JobHistory is not job log. But there shall be a requirement for aging job out of JobHistory, and that impacts the implementation of Job Log (for regulatory requirement).

6. Scan Last Call Comments/Resolutions

- The latest Scan Service Last Call comments and spec will be posted after the weekend.
- "Tray" is aligned with WSD-Print, IPP semantics.
- Inconsistency in object name vs XML element name - updated throughout doc.
- Some URI should be URL used and corrected.
- Mistakes in Scan direction and Crossfeed direction X, Y. Made sure these are treated consistently, and match the diagram.
- Removed references to activate, de-activate, and promote that did not apply to Scan Service.

- Where there is enough info provided for interoperability – provided all keywords for allowed values, including data types will be added for each attribute in the spec. This should be enough information for interoperability.
- Action Items:
  - Post the latest Scan Service Last Call comments and Scan Service spec.
  - Data type is not specified for all attributes consistently – a change still need to be worked.
  - All elements will have data type. URI is a string that conforms to RFC3936 URI syntax. Abstract data types used are Boolean and int. "int" will be defined as a signed 32-bit integer. "string" is a UTF-8 string, strictly conforms to network Unicode specification, for example what's used in XML spec [reference the XML spec]. Boolean is logically one-bit, the binding determine the length of Boolean data type. "DateTime" is the real calendar date and time.
  - Added one section to cover the differences between WS-Scan, and PWG model. Should state that the element name in this spec are aligned with the IPP and DPA spec, and the mapping table between the two naming conventions is provided.
  - Scan media name, media type, media color need to add references to those PWG standard keywords throughout the doc.
  - SannerMargin needs to add data type and definition for north/south/east/west.
  - State has slightly different allowed values; needs to explain those difference/definition of the keywords
  - StateReasons is a union of three different wellknown types (keyword elements) and is also extensible. The spec should simply provide the normative reference for the list of keywords, and give some examples of the keywords. This will eliminate the problem with a overly long list of keywords that need to be copied here and making sure there is none missing, plus the list could evolve further with IPP/2.0 and thus currently not complete.
  - Need to finish update for additional comments from Lee Farrell. Spec is updated up to the ScanRegion element.
- Job State and Service State are not extensible in PWG, but extensible in WS-Scan. Also WS-Scan has transitional state, added some edge conditions like "started". WS-Scan Allow you add new state, but won't recognize it any way.

7. Next Steps:

- The first Last Call results in extensive changes, it needs another Last Call.
- Expect to finish Scan Service update within 1.5 weeks.
- Release the updated scan spec on Jan 5th.
- Send out the updated Scan Service spec for re-circulation of PWG-wide Last Call – attempting to have final vote at the next face-to-face.
- Get updated diagram into Scan Service from Bill's Overall MFD doc. Bill needs to get what changes Pete wants for the job ticket lifecycle diagram.
- Next teleconference: Jan 8th focusing on Resource Service.
- Start Resource Service MFD working group Last Call one week after Jan 8th.