Joint Plenary LF/OP & PWG

Harry Lewis
Chairman – Printer Working Group
September 27, 2007
Montreal, Canada

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Joint Plenary Agenda

- 9:00 AM – PWG Welcome, Intro, Overview - Harry Lewis
- 9:10 AM – LF/OP Welcome, Intro, Overview - Ira McDonald
- 9:15 AM - Linux Foundation Open Printing - Ira McDonald
- 10:25 AM - Summit Issues, Summary, Q & A - Ira McDonald
- 10:40 AM -10:55 AM Break
- 10:55 AM - WIMS Protocol, Counter MIB, Status/Overview - Harry Lewis
- 11:00 AM - WIMS CIM - Status, Overview - Harry Lewis
- 11:10 AM - MFD Alerts - Status, Overview - Harry Lewis
- 11:20 AM - MFD Model - Status, Overview - Harry Lewis
- 11:30 AM – Semantic Model - Status, Overview – Harry Lewis
- 11:40 AM – IPP PSX - Status, Overview - Harry Lewis
- 11:50 AM - PDM - Status, Overview - Harry Lewis
- 12:00 AM - Summary and Q & A - Harry Lewis
- 12:05 PM -PWG & LF OP "Next Steps" and Wrap-up - H Lewis/I McDonald
- 12:15PM – THANKS! & Close Joint Plenary

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PWG Background

- Standard Printer MIB
  - RFC 1759
  - RFC 3805
- Internet Printing Protocol (IETF Charter)
  - CUPS Print Spool (Linux, Max OS-X)
  - IPP PSX (extensions)
- Common Semantic Model
  - Cross industry – Cross
  - Model and schema specifications
- Print Services Interface
  - Web Services interface for printing (abeyant – underlying tech)
- Web-based Imaging Management Services
  - Enterprise fleet management
  - Counters (model and schema) for Output Management Services
  - DMTF CIM model upgrade (DMTF Charter)
  - Imaging State & Counter MIB
- Port Mon MIB
- MFD Modeling
  - MFD Alerts
  - MFD Device and Services management
- Projector and Display management

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PWG Members (27)

- 366 Software
- Apple Computer, Inc.
- Canon, Inc.
- Coretronic
- Dell
- Easy Software Products
- Epson Inc.
- Fuji Xerox
- Hewlett-Packard
- InfoPrint Solutions Company
- Intermate A/S
- Konica Minolta
- Kyocera Corporation
- Lexmark International
- Microsoft
- MPI Tech
- NEC Displays
- Northlake Software, Inc.
- Oki Data
- Peerless Systems Networking
- Ricoh
- Samsung Electronics
- Sharp Labs of America
- SigmaTel
- Toshiba
- Xerox Corporation
- Zoran Imaging Division

- Brother (pending)

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Web-based Imaging Management System WG

Printer Working Group
Face-to-Face Meeting
September 2007

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WIMS WG Objectives

The WIMS working group is concerned with the management of imaging services and devices via the Web. The Objectives are:

- Continuing support and update of the protocols and specifications produced by the working group.
- Definition of new and the recasting of previously defined imaging device and service management elements into a web management compatible context.
- Continuing update and upgrade of the DMTF/CIM printing classes in anticipation of this forming the basis for imaging service and device management over the Web.
- Monitoring other standards activities relating to Web-base management of Imaging Systems

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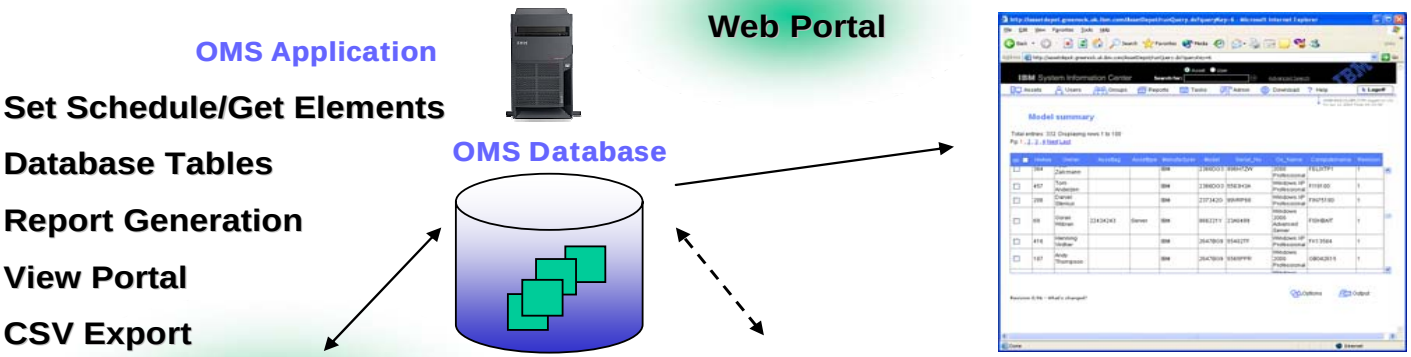
Fleet Management Concepts

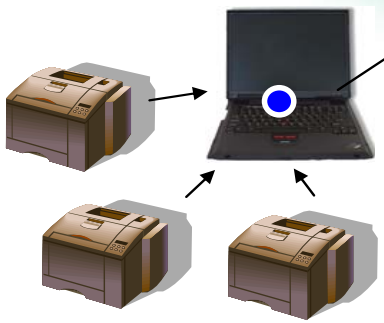
OMS Printer Management Components



Internet
(WIMS Protocol)

PMC

Cust. Firewall



Register For Management

SNMP Proxy

Send Reports

Interchange Data
(CSV)

Printer	Model	S/N	Count
HR	1402	334986	30642
Admin-1	2408	8838489	102334
Admin-2	4017	2893556	555
Exec-1	2480	9898498	23334

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WIMS Past and Current Projects

- **Printer Management XML Schema**
  (Being incorporated into Semantic Model)
- **Web-based Imaging Management Service**
  PWG Candidate Standard 5106.2-2006
- **PWG Standarized Imaging System Counters**
  PWG Candidate Standard 5106.1-2007
- **Imaging State & Counter MIB (currently in update)**
- **Update of DMTF/CIM Printing MOFs**

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Standardized Imaging System Counters

This document defines the usage counters for an Imaging System, such as a network spooler, a printer or a multifunction device, and the services such a system offers.

The elements defined are included in the Imaging State & Counter MIB and are intended for inclusion in a compatible W3C Schema.

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Imaging State & Counter MIB

Version 2 of Counter MIB expanded to Imaging State and Counter MIB

- **Reflects addition to Counter Spec.**
- **Supports monitoring of the counters and states of all imaging services and subunits independent of any other MIB (but coherent with Printer MIB, Finisher MIB, and Host Resources MIB).**
- **Resolves the main problem of MFP alerts (ambiguity about which services are affected when a given subunit has a fault).**
- **Addresses issues raised by those concerned with MFP; name change reflects broader scope**

ftp://ftp.pwg.org/pub/pwg/wims/wd/wd-wimscountmib20-20070601.zip .

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Printer Management XML Schema

ftp://ftp.pwg.org/pub/pwg/wims/schemas/wims-schemas-20060612.zip

- Agents-20060612.xsd
- Alert-20060612.xsd
- Devices-20060612.xsd
- Events-20060612.xsd
- JobTypes-20060612.xsd
- Managers-20060612.xsd
- Report-20060612.xsd
- Resource-20060612.xsd
- Schedule-20060612.xsd
- Services-20060612.xsd
- Subunits-20060612.xsd
- System-20060612.xsd
- WimsBase-20060320.xsd
- WimsMsg-20060612.xsd

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DMTF/CIM Printing MOF Update

DMTF CIM appears to be the common path for modeling things for Web Services management

To ensure a PWG aligned CIM printer/printing model, an agreement was made with DMTF/CIM to update the CIM Printing MOFs with the PWG printer management model and existing printer and printing management capacities.

- The PWG obligations under this agreement were met under Phase 1 of the PWG/WIMS/CIM effort.
- The WG has gone on to phases 2 and 3 of the effort, to update and bring management coverage up to a reasonable level, but there have been unexpected difficulties in accommodating DMTF/CIM requirements.
- The WG has concluded that expanding the MOFs to provide more complete modeling is a necessary step in preparation for Hardcopy Imaging Management by Web Services

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Current CIM Update Activities

Continuing Phases 2 and 3 of the CIM Printing Update Activity

- Fix definitions of ambiguous properties, deprecate non-interoperable properties; move properties to correct parent class
- Add needed management items that are available through existing printer management methods (e.g., MIBs & IPP)

Current Status of Change Requests (additions and revisions) to DMTF maintained on:

https://pwg-wiki.wikispaces.com/DMTF+CIM+Core+Schema+Change+Requests

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CIM CR Editorial Changes

Title	Status
CIM_Printer	**in CIM Schema v2.13**
CIM_OwningPrintQueue	**adopted, in v2.14**
CIM_PrintJob	**adopted, in v2.14**
CIM_PrintQueue	**adopted, in v2.14**
CIM_PrintSAP	**adopted, in v2.14**
CIM_PrintService	**adopted, in v2.14**
CIM_QueueForPrintService	**adopted, in v2.14**

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CRs Adding New Classes

• CIM_PrintOutputTray	Adopted -v2.16	*Needs corrections and updates.*
• CIM_PrintInputTray	Adopted - v2.16	*Needs corrections and updates.*
• CIM_PrintMarker	Adopted - v2.17	Done
• CIM_PrintSupply	Adopted - v2.17	Done
• CIM_AssociatedPrintSupply	New template	To be balloted in TC.
• CIM_PrinterElement	Adopted - v2.17	Done
• CIM_PrintMediaPath	Adopted - v2.17	Done
• CIM_PrintFinisher	New template	To be balloted in TC.
• CIM_AssociatedPrintMediaPath	Withdrawn 8/28.	No further action
• CIM_AssociatedPrintOutputTray	Withdrawn 8/28.	No further action
• CIM_PrintChannel	Adopted - v2.17	Done.
• CIM_PrintInterpreter	Adopted - v2.17	Done
• CIM_AssociatedPrintInterpreter	Adopted - v2.17	Done
• CIM_PrinterComponent	Adopted - v2.17	Done

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Additional CRs Required

Finish adding classes:

- Add classes CIM_PrintAlertLog and CIM_PrintAlertRecord
- Add class CIM_PrintInterlock
- Add class CIM_PrintConsoleLight

Major upgrade:

- Amend class CIM_Printer

Minor corrections:

- Amend class CIM_PrintOutputTray
- Amend class CIM_PrintInputTray.

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MFD Alerts

Status

September 2007

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Project History

- Initial proposal:
  - January 19, 2006 (Las Vegas PWG)
- First Draft Document:
  - May 22, 2006
- Latest Draft Document:
  - March 13, 2007
  - Status: Prototype

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The Problem to Solve

- I have utilities to manage printers
  - Utilities use SNMP and …
  - … the Printer MIB Alert Table
- Multifunction devices are shipping
  - Want to use …
  - … existing utilities to support MFDs
  - … with only minimal modifications

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The Solution

- MFP Alert Table Extensions
  - Define new MFP Alert Groups for …
  - Scan devices and …
  - Facsimile
  - to cover Scan, Copy, and Fax.

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Scan Device Model

- Scan Device General Subunit
  - Scan Device Media Path Subunit
  - Scan Device Scanner Subunit
  - Scan Device Transformer Subunit
  - Scan Device Output Channel Subunit
  - Scan Device Input Channel Subunit
  - Scan Device Console Subunit
  - Scan Device Covers Subunit
  - Scan Device Supply Subunit

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Facsimile Device Model

- Fax Device General Subunit
  - Fax Device Modem Subunit
  - Fax Device Output Channel Subunit
  - Fax Device Input Channel Subunit
  - Fax Device Console Subunit
  - Fax Device Covers Subunit

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Common Scan/Print Subunits

- Scan Device Media Path Subunit
  - prtMediaPath
- Scan Device Input Channel Subunit
  - prtChannel
- Scan Device Console Subunit
  - prtConsole
- Scan Device Covers Subunit
  - prtCovers

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Common Fax/Printer Subunits

- Fax Device Input Channel Subunit
  - prtChannel
- Fax Device Console Subunit
  - prtConsole
- Fax Device Covers Subunit
  - prtCovers

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System General Alert Group

- System General Output Channels Group
  - Scan Device Output Channel Subunit
- System General Transformer Group
  - Scan Device Transformer Subunit
- System General Supply Group
  - Scan Device Supply Subunit

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MFD Alert Groups

- New Alert Group Number Assignments
  - Scan Device General Group (50)
  - Scan Device Scanner Group (51)
  - Fax Device General Group (60)
  - Fax Device Modem Group (61)
  - System General Output Channels Group (70)
  - System General Transformer Group (71)
  - System General Supply Group (72)

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Document Status

- Current Status is “Prototype”

- Needs one or more prototypes …
  - Next step is Stable Draft
- Needs two or more prototypes …
  - To become a Candidate Standard

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For More Information

- The current specification is at:

ftp://ftp.pwg.org/pub/pwg/pmp/wd/wd-mfp-alert-groups10-20070313.pdf

ftp://ftp.pwg.org/pub/pwg/pmp/wd/wd-mfp-alert-groups10-20070313.doc

- PMP Web Page:

  pmp@pwg.org

- To subscribe to the PMP mail list see: http://www.pwg.org/mailhelp.html

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Multifunction Device Working Group (MFD)

PWG Plenary
September 2007
Montreal
Peter Zehler / Nancy Chen

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MFD Overview

- Network print devices have evolved to support additional multifunction services (e.g., Scan, EmailIn, FaxOut, etc.)
- Remote job submission and service, device, and job management capabilities are needed for administrators, operators, and end users
- Currently the models and protocols for these network MFDs are fragmented and proprietary. A standard for job submission and service, device, and job management would benefit both the imaging industry and the user community.

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MFD Workgroup Objectives

The MFD working group objective is to drive towards a common set of semantics for imaging services hosted on Multifunction Devices. The Objectives are:

- Definition data and operational model for the various services available on Multifunction Devices. Initial focus will be for a Scan Service.
- Define consistent names and semantics for these management objects that can be accessed through any supported management protocol.
- Define an abstract Scan Service Interface for Job Submission and service, job, and document management
- Define a set of XML Schema files for the abstract Scan service, job, and document objects, operations, and attributes that are defined in the abstract Scan Service Interface specification

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MFD Working Activities

- Working Draft (Scan Service)
  - ftp://ftp.pwg.org/pub/pwg/mfd/wd/wd-mfdscan10-20070820.pdf
- Current Semantic Model Schema and WSDL (Very preliminary, rough form, not in synch with specification)
  - ftp://ftp.pwg.org/pub/pwg/mfd/schemas/PWG-SM2-Latest.zip

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MFD Milestones / Next Steps

- Charter Phase
  - C-1. DONE – Initial working draft of MFD WG charter – April 2007
  - C-2. DONE – Interim working draft of MFD WG charter – April 2007
  - C-3. DONE – Stable working draft of MFD WG charter – May 2007
- Definition Phase
  - D-1. Initial draft of abstract Scan Model and Requirements –Q4 ‘07
  - D-2. Prototype draft of abstract Scan Service Interface – Q1 ‘08
  - D-3. WG Last Call of abstract Scan Service Interface – Q2 ‘08
  - D-4. Prototype working draft of Scan XML Schema – Q1 ‘08
  - D-5. WG Last Call of Scan XML Schema – Q2 ‘08
  - D-6. Prototype working draft of Scan Web Services Binding – Q2 ‘08
  - D-7. WG Last Call of Scan Web Services Binding – Q3 ‘08
- Implementation Phase
  - I-1. Interoperability event for MFD Web Services Binding – Q4 ‘08

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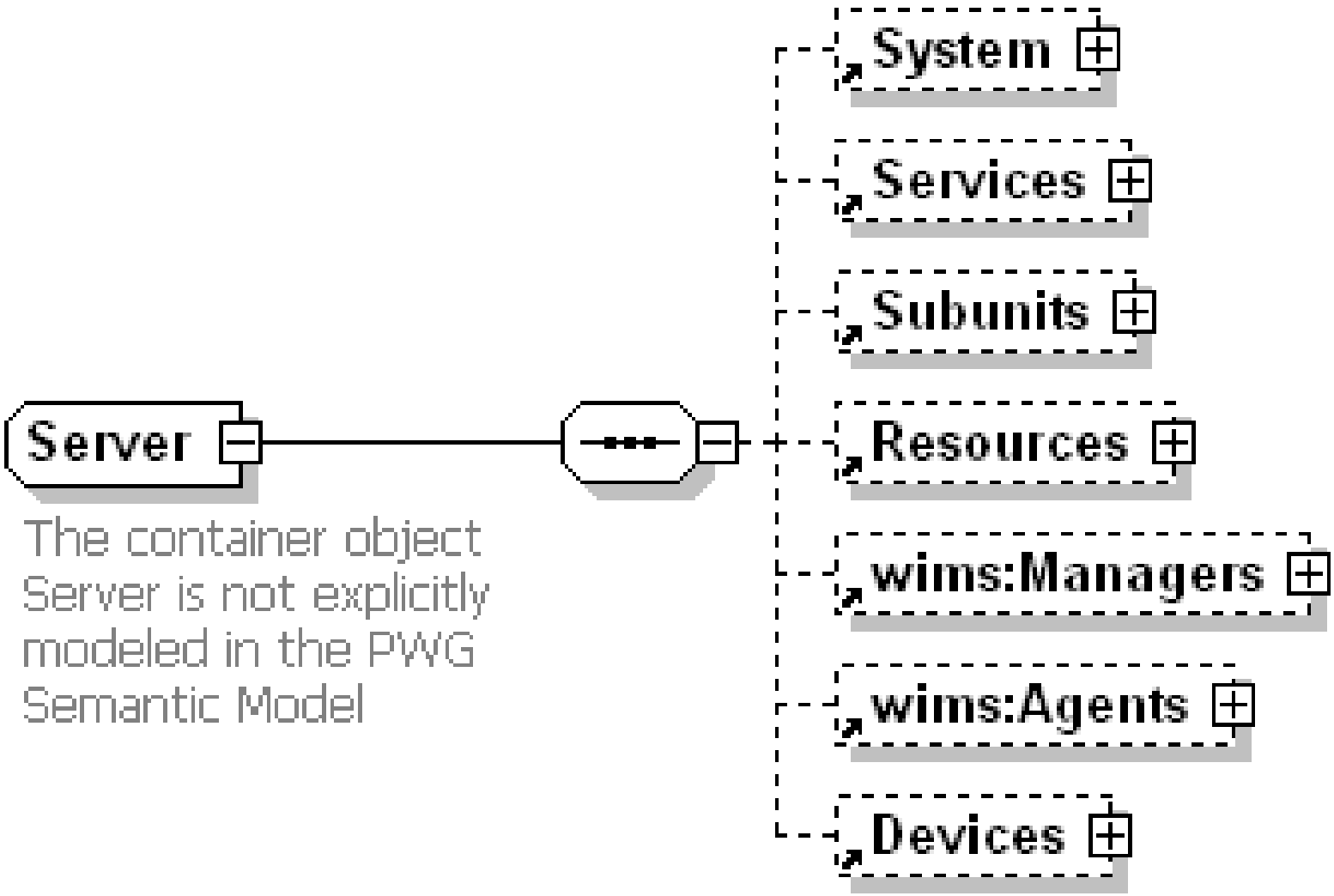
MFD Schema – Top Level



The container object Server is not explicitly modeled in the PWG Semantic Model

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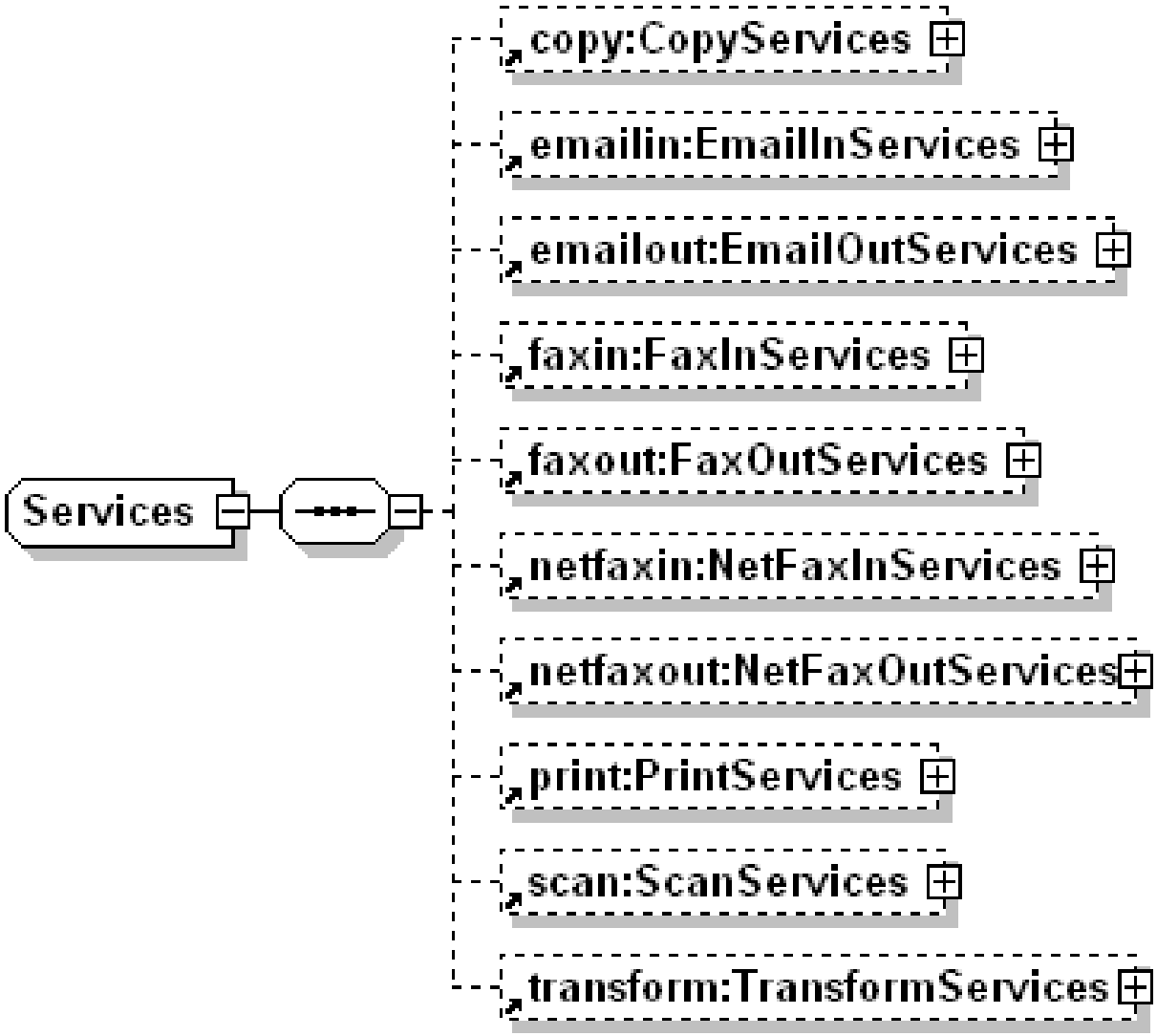
MFD Schema - Services



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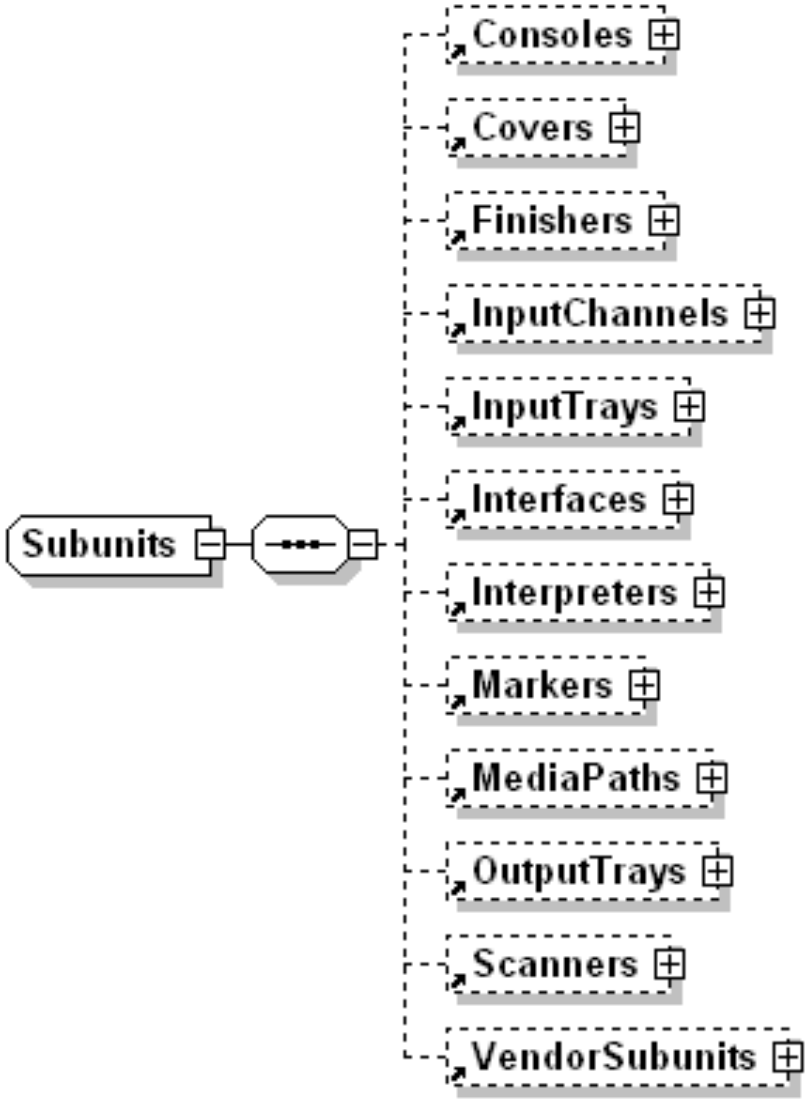
MFD Schema - Subunits



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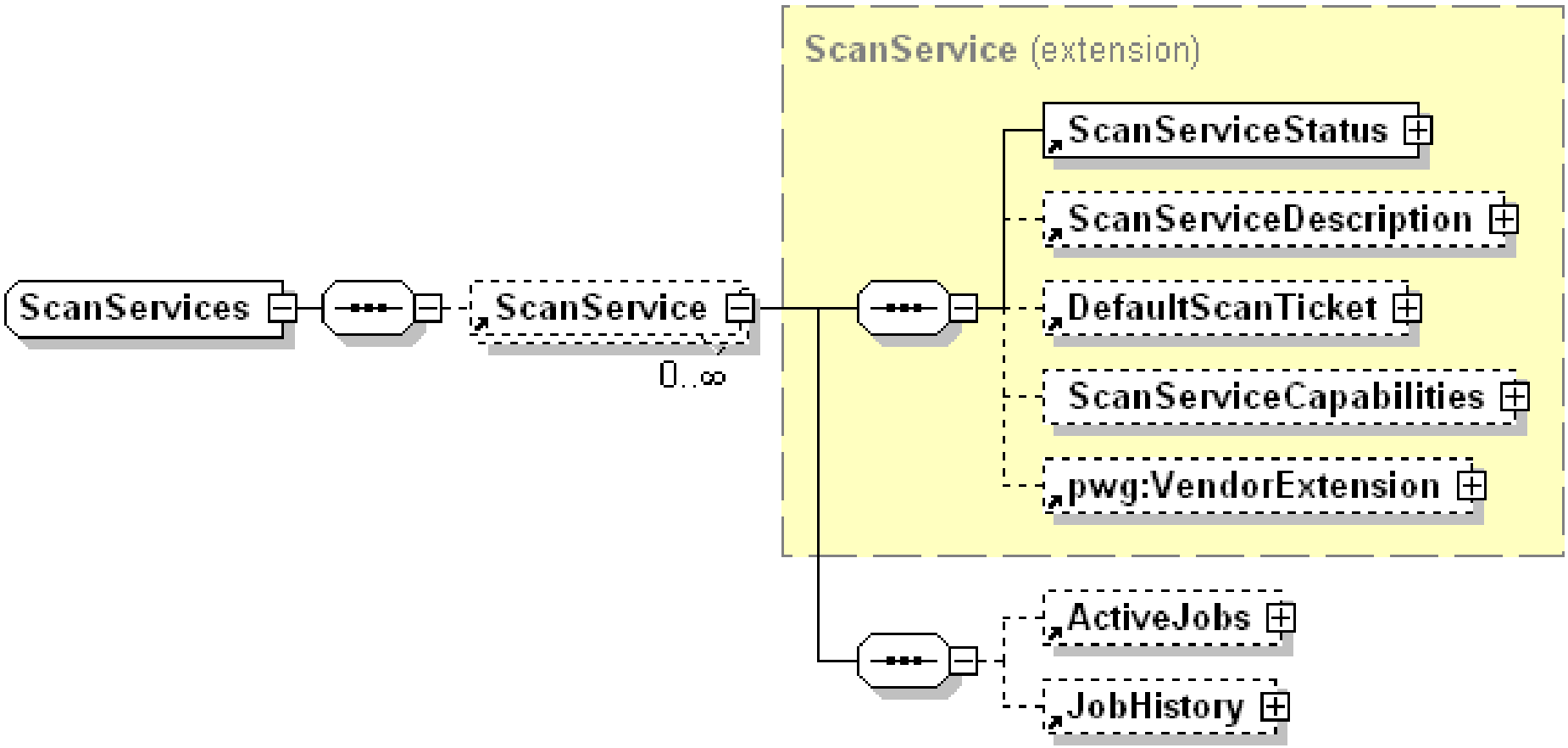
MFD Schema – Scan Service



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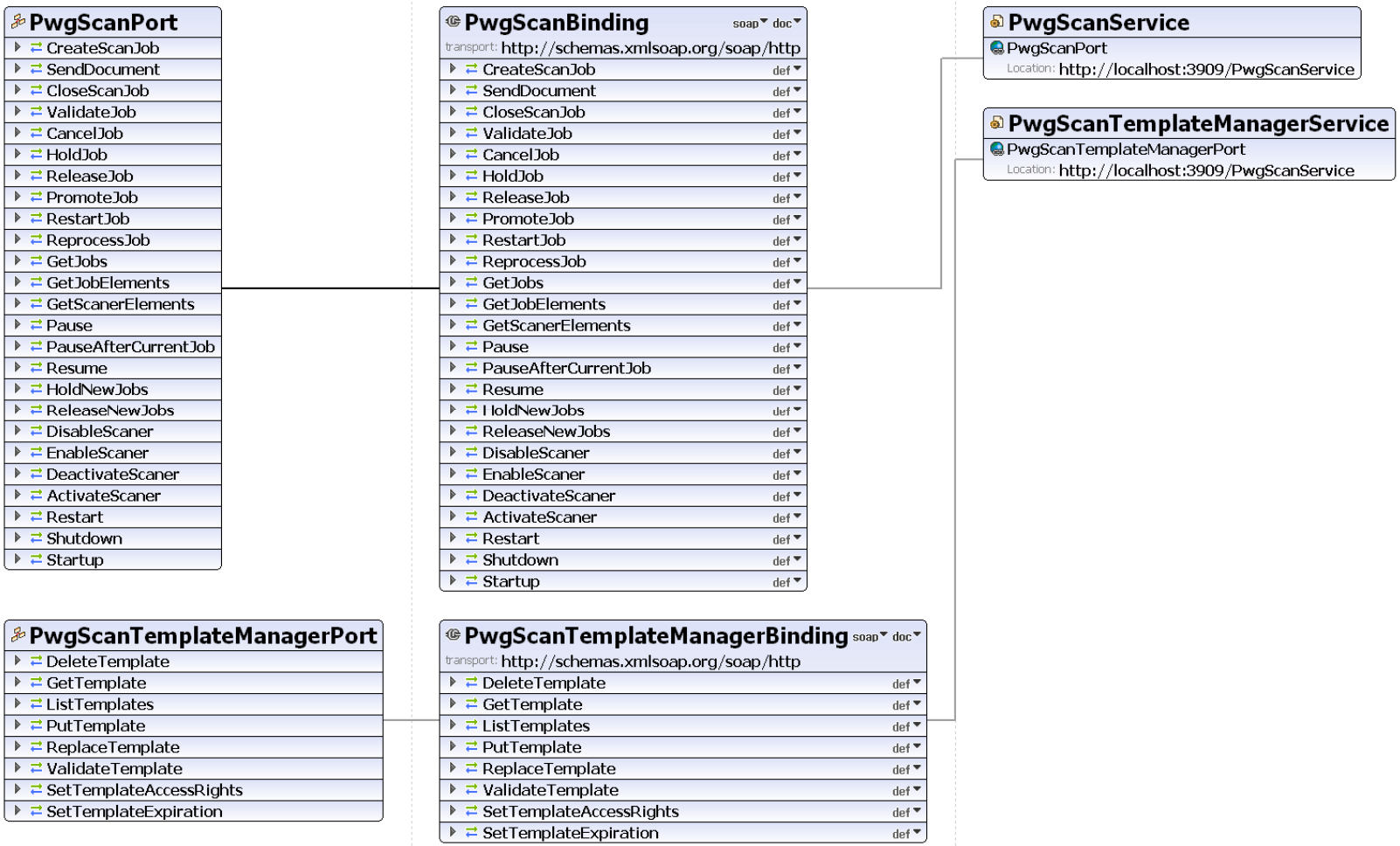
MFD Schema – Scan Svc WSDL



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Semantic Model Working Group (SM)

PWG Plenary
September 2007
Montreal
Peter Zehler

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SM Overview (specification)

- The initial project started as a way to make the Internet Printing Protocol (IPP) more accessible. The goal was to describe the model in a single 50 page document instead of the 1600+ pages in some 33 documents. (It actually took 67 pages)
- The Semantic Model document (PWG5105.1-2004) does not define the print semantics. It gives a short description of each element with a reference to where the details are defined.
- The document strives for brevity with a heavy reliance on figures and table.
- The specification was published in 2004.

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SM Overview (schema)

- In parallel with the specification a schema was written to represent the model.
- The goal of the PWG Semantic Model Schema was to promote the reuse of existing well defined semantics agreed upon by members of the PWG.
- This initial work was limited to the data model and did not include any service definitions.
- The schema has been used within the PWG in efforts such as Print Service Interface (PSI) and Universal Printer Description Format (UPDF).
- The PWG Semantic Model Schema has been the basis for work outside the PWG.

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SM WG Activities

- The group is awaiting the completion of the Multifunction Device Working Group.
- The Semantic Model v1 is available via the Working Group webpage
  - http://www.pwg.org/sm
- See the MFD Working Group webpage and WIKI
  - http://www.pwg.org/mfd
  - http://pwg-wiki.wikispaces.com/MFD
- The MFD Working Group is extending the model to include services other than print. In addition to the services the MFD and WIMS Working Groups are including device aspects (e.g. input bins, media path).
- The current (very preliminary and changing) schema is available on the MFD webpage. There is also a WIKI site that provides a high level view of the schema structure and content
  - http://pwg-wiki.wikispaces.com/MFD+schema+root

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IPP Printer State Extensions

PWG Plenary
September 2007
Montreal
Craig Whittle / Ira McDonald

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IPP PSX Background / Rationale

- BMLinkS, a consortium of printer vendor in Japan, requested support for additional values for “printer-state-reasons”
  - Additional values needed to support finishing options
- Current “printer-state-reasons” attribute in IPP does not include needed values for secure monitoring of printers
  - The first definition of the "printer-state-reasons" attribute of the IPP Printer object was published in IPP/1.1 (RFC 2911)
  - The mapping of printer device and printer subunit alerts defined in the 'PrtAlertCodeTC' textual convention in IANA Printer MIB (originally published in RFC 3805) was very sparse (less than 20% coverage)
- IPP w/ TLS (including PSX extension) offers improved security over SNMP

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IPP PSX Objectives

- Develop a "IPP Printer State Reasons Extensions" PWG Candidate Standard
  - Define new values for the IPP/1.1 (RFC 2911) "printer-state-reasons" attribute for:
    - Every printer device and printer subunit alert defined in the 'PrtAlertCodeTC' textual convention in IANA Printer MIB
    - Every finishing device defined in the 'FinDeviceTypeTC' textual convention in IANA Finisher MIB
  - Define a new “printer-alert” attribute that encodes all of the eight machine-readable columnar objects defined in the 'prtAlertTable’
  - Define a new “printer-alert-description” attribute that encodes the one localized object ‘prtAlertDescription' defined in the 'prtAlertTable'

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IPP PSX WG Activities

- Working Draft
  - ftp://pwg.org/pub/pwg/ipp/wd/wd-ippstate10-20061107.pdf
- BMLinkS Feedback
  - BMLinkS has confirmed current proposal “for our first request is enough”
- Drafts sent to UP3i
  - for UP3i review and possible application in UP3i Finishing standards
- Before a PWG Last Call at least one prototype is needed (need not be comprehensive)

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IPP PSX Milestones / Next Steps

- Charter Phase
  - C-1. DONE - 'Initial' draft of IPP PSX Charter – 25 May 2006
  - C-2. DONE - 'Stable' draft of IPP PSX Charter – 1 June 2006
  - C-3. DONE - PWG SC approval of IPP PSX Charter – 1 June 2006
- Definition Phase
  - D-1. DONE - 'Initial' draft of PWG IPP PSX – 17 July 2006
  - D-2. DONE - 'Prototype' draft of PWG IPP PSX – 7 November 2006
  - D-3. Prototyping reports on PWG IPP PSX – December 2007
  - D-4. 'Stable‘ draft of PWG IPP PSX – January 2008
  - D-5. PWG Last Call of PWG IPP PSX – March 2008
  - D-6. PWG Formal Approval of PWG IPP PSX – May 2008
  - D-7. IANA registration of PWG IPP PSX updates – June 2008
- Implementation Phase
  - I-1. Interoperability Event for PWG IPP PSX – Fall/Winter 2008

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Projector and Display Management

Rick Landau
Dell, CTO Office

2007/09/24 v0.2

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PDM Goals

- Define abstract data model
  - Using abstract language template in XML
- Generate usable SNMP MIB first
  - Translated from the XML using XSLT
- Provide consistent naming, datatypes, semantics for other manageability access points: embedded web server, serial, CIM MOF

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Groups for PDM v1 MIB

- General
- PowerState
- SystemController
- DisplayCapability
- DisplaySetting
- LightSource
- Fan
- Filter
- ThermalSensor
- ThermalSwitch
- Audio
- Button
- Localization
- Interface
- Interlock
- Alert

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Mandatory vs. Optional Groups and Properties

- Some groups are optional, e.g., Interlock, Audio
- If a device implements a group, it must implement the mandatory properties of the group
- Example: ThermalSensor
  - If the device has any thermal sensors, the group is (conditionally) mandatory
  - Mandatory properties: Description, Status, Temperature
  - Optional properties: ErrorCounter, ErrorCounterReset, ReplacementPartNumber
- We will write conformance rules
  - Public feedback would be very helpful

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PDM Status

- Added several groups to fill out needed information
- Revised many groups for new naming and numbering conventions
- Progress toward a MIB
  - Greatly improved translations of XML into MIB fragments
  - Can assemble a sort of MIB file from XML in a few minutes
- Still needed
  - Generated MIB file needs fixups or hand editing
    - Write fixup scripts/programs to do most of this editing
  - Reorganize core properties into General group
  - Probably still a few straggler properties needed, too

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Q & A

- Go to the new Wiki
  - http://pwg-wiki.wikispaces.com/

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LF-OP and PWG Next Steps

- General feedback that Plenary presentations are too detailed and should not assume a high degree of familiarity.
- Joint Plenary should discuss high-level issues and attempt to identify possible intersection between LF/OP and PWG.
- Prior to next Joint Plenary (likely October 2008 time frame) … develop topic for dialogue or BOF.

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Thanks!

- Till, Ira, Benoit!... and all others who helped make the Montreal meeting possible!
- Polytechnique Montreal!

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