Web-based Imaging Management System

Including

CIM Realignment

Printer Working Group

Plenary Meeting

26 October 2006

A Program of the IEEE-ISTO

pwg

Background – WIMS WG

- **Original Objective- Standard for remote Monitoring and Configuration of Imaging equipment :**
  - Managed within the Enterprise but located in remote offices
  - Managed by a third party company leasing out equipment
  - Managed by a third party under a maintenance contract
- **As this objective was considered, two major development requirements for Imaging Equipment emerged:**
  - A consistent management model
  - A Web-Services type management approach

Background – WIMS WG

- **Working Group Chartered in 2003 to develop**
  - A consistent Device and Service management mechanism
    - Applicable to both intra and extra-enterprise management
    - compatible with the new generation of Management Applications
  - A flexible Management Model that is
    - Applicable to services as well as devices
    - Extensible to imaging equipment beyond printers
    - Structured to support management information communications in the way information is consumed

WIMS Projects

- ## WIMS "Protocol"

- ## Generation/Conversion of Imaging Management information into XML Schema

- ## Counter Specification, MIB and Schema

- ## Incorporation of the Management model into the Semantic Model

- ## Preparation for Web Services based management by update of DMTF/CIM

WIMS "Protocol"

- **Definition of:**
  - **The Agent Interface -** Operations necessary
    - to allow Manager access,
    - to solicit a Schedule of management actions,
    - to report on requested elements and
    - to provide alert information for identified events.
  - **The Management Interface -** Operations by which the Manager requests information
  - The monitoring, management and administrative **Actions** in the Schedule of Management Interface operations to be performed by the Agent.

WIMS "Protocol"

- Application of "Schedule" concept by which:
  - Agent can initiate all connections with the manager, including the initial one;
    - Management only with the consent of the managed
  - Managers provide a schedule of actions that the Agent is to perform;
    - Such as getting the next schedule
  - The Agent executes actions without specific intervention of manager;
    - Such as sending reports to the manager at certain times and/or under certain conditions

WIMS "Protocol"

- **"Abstract Protocol" (without binding)**
  PWG Candidate Standard 5106.2-2006 -
  Web-based Imaging Management Service

- Uses Management Elements Derived from
  – Printer MIB, Counter Spec, etc.

- Needs Document "Binding" protocol to transport
  – Intended for SOAP over HTTP
  – Effort pending planned implementation

Management Elements - XML Schema

- **Derivation of XML Schema elements from Related MIBs and Counter Spec elements**
  - **RFC2790- HR MIB**
  - **RFC3805- Printer MIB V2**
  - **RFC3806- Printer Finishing MIB**
- **Schema in:**
  - **ftp://ftp.pwg.org/pub/pwg/wims/schemas/**
- **Last WIMS versions in**
  - **wims-schemas-20060612.zip**
- **Effort then to incorporate in Semantic Model**

Counter Specification

- **Management Elements**
  - **Printer MIB (etc.) provided elements for Device**
  - **IPP provided elements for Job**
  - **Needed elements addressing Services**
- **PWG Standard for Imaging System Counters**
  PWG Candidate Standard 5106.1-2005
  - WorkTotals Counters
  - Datastream Counters
  - Auxiliary Counters
  - Waste Counters
  - Maintenance Counters
  - Media Used Counters
  - Availability Counters
  - Monitoring Counters

For Email, Fax, Print, Scan, Copy & Transform Services

Imaging System Management by Web Services

- **Overall trend toward Web Services**
  - **MS- Management**
  - **WSDM (OASIS)**
  - **MTF WEBM**
- **Desirable both for manufacturers and for users to have consistent Management Model**
- **DMTF/CIM**
  - **Providing the Models for WSDM**
  - **Has taken the task or resolving WS-Management and WSDM incompatabilities**
- **Important that the CIM reflect up-to-date management model for Imaging Systems**

PWG Agreement with DMTF

- **Alliance with DMTF:**
  "Together, the groups will work to review and update the DMTF's Common Information Model (CIM) with input based on the latest Printer Management Information Base (MIB) and the PWG Common Semantic Model."

  June 14, 2005 DMTF Press release

CIM Printer Realignment Effort

- **Approach**
  - Three Phases –
    - **Phase 1 - Editorial corrections; mapping objects, additional enums**
    - **Phase 2 - Fix definitions of ambiguous properties, deprecate non-interoperable properties; move properties to correct parent class**
    - **Phase 3 – Add needed management items that are available through printer management applications**
    - **Possible Phase 4 - Expand Model to include MFDs**

CIM Printer Realignment Effort

- **Process**
  - **Create "white paper" description of changes, additions, deletions with explanations**
  - **Create formal DMTF Change Requests (CR) from white paper**
  - **Issue Call for Objections to alert PWG membership to changes**
  - **Submit CRs to DMTF/CIM**
  - **When all CR's Approved by DMTF, update White Paper and submit to PWG as Informative Document**

CIM Realignment Phases

- **Phase 1 - Editorial corrections; mapping objects, additional Enums**

  - **Change Requests complete, submitted and approved – should appear in next CIM update**

  - **For Change Requests see CIMCoreCR-xxxx documents dated 6/23/2006 in ftp://ftp.pwg.org/pub/pwg/wims/wd/**

  - **White Paper posted at ftp://ftp.pwg.org/pub/pwg/wims/wd/wd-wimscimprint10-20060618.htm**

CIM Realignment Phases

- **Phase 2 - Fix definitions of ambiguous properties, deprecate non-interoperable properties; move properties to correct parent class**

- **Phase 3 – Add needed management items that are available through printer management applications**
  - **Decision to do Phase 2 and Phase 3 concurrently**
  - **Recently completed exhaustive review of elements in Printer MIB to be incorporated**
  - **Presently considering most effective mapping of MIB tables into CIM structure**

Plan for Phases 2 & 3

- **Sequentially Address Existing Printer Management Structures, in the following order**
  - **Printer MIB**
  - **IPP Printer Elements**
  - **IPP Job Elements and Job MIB**
  - **Finisher MIB, perhaps aspects of HR MIB**

Plan for Phases 2 & 3

- **For Each of these Structures**
  - Determine what management elements in this existing structure should be included in the CIM model
  - Determine if each element exists in the current model, and if so whether it is under the correct class
  - If it does not exist, add it at an appropriate place in the model
  - If it exists but is inappropriately located, deprecate it and add it at an appropriate place in the model
  - Create and Submit the necessary set of CR's to CIM

Short Term Milestones

- **Working on Elements from Printer MIB that have been selected for inclusion**
  - **Early December 2006: Complete MIB to MOF tool to make conversion easier**
  - **Early March 2007: Change Requests Completed and submitted to PWG under Call for Objections**
  - **April 2007: Change Requests Submitted to CIM.**
- **Consideration of IPP as a Printer Object Source will start in January and will proceed concurrent with documentation of Printer MIB elements**

Other WIMS Activities

- **Continued Monitoring of Management via Web Services Activities**
  - **Possible interaction with WSDM to provide "showcase" application**
  - **Co-ordination with Semantic Model and PMP Working Groups for expansion to MFD and general Imaging Services**